LifeForge

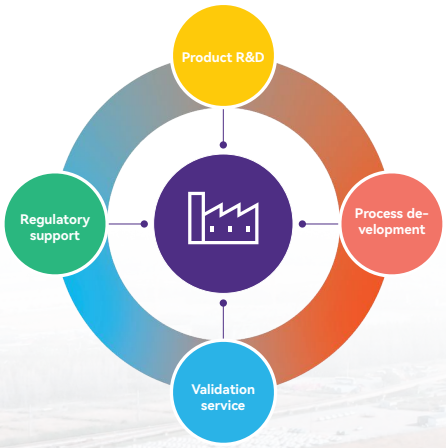
Your Reliable Partner in Pharmaceutical Filtration Processing

LifeForge

LifeForge
Product Manual

Company Profile

Lifeforge specializes in the development and application of filtration-based pharmaceutical processing products and technologies. We are committed to providing pharmaceutical companies with high-quality separation and purification solutions that meet both domestic and international regula-tions.



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STERILE FILTRATION

STERILE FILTRATION

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Nexpore® DHC Sterilizing-Grade Hydrophilic PES Filter Polyethersulfone（PES）

High Capacity
High Flux
Process Economics

Product Introduction

Lifeforge Nexpore® DHC filters are constructed with a double-layer asymmetric polyethersulfone (PES) membrane, which allow for various combi-nations of membrane pore sizes to meet the requirements for filtration precision in different applications. The filters are suitable for a variety of sterile filtration of process fluids.

Nexpore® DHC filters are validated by strict filtration performance guarantees, with wide chemical compatibility, high flow rate and high capacity to optimize process efficiency and cost effectiveness.

Key Features and Benefits

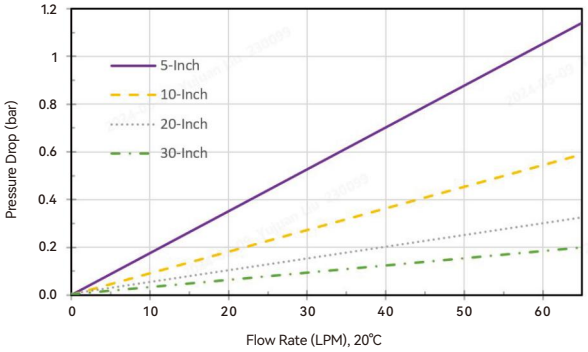
- Reliable bacterial retention performance
- High flux and high capacity
- 100% integrity test passed
- Consistent scale-up performance from lab to commercial manufacturing

Typical Applications

- Culture media filtration
- Buffer filtration
- Intermediate product filtration
- Final fill filtration

Typical Flow Characteristics

Water Flow Rate and Pressure Drop-Nexpore® DHC 0.45+0.2 μm Filters



Nexpore® DHC Sterilizing-Grade Hydrophilic Filter

Product Speci ications - Nexdisk® Disc Filters

Product Specifications	Size (Diameter)	50 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)
	Supporting Layer/ Housing	Polypropylene (PP)
Integrity Testing	Bubble Point	≥ 3520 mbar（51 psi）(wetted with H_2O, 20℃, compressed air)
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃
		Reverse: 1.0 bar（14.5 psi）@ 25℃
	Sterilization Resistance	Autoclave(A&G): 125℃, 60 min, 30 cycles Gamma-compatible (G): 25-45 kGy *Presterilized disc filter(s) must not be re-sterilized
	Effective Filtration Area	18 cm^2
	Pore Size	0.45+0.2 μm
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>
	TOC / Conductivity	TOC < 0.5 mg/L, Conductivity < 1.3 μS/cm
	Manufacturing Integrity	100% integrity test passed
	Manufacturing Environment	Manufactured in conformance with cGMP

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Disc adaptor
D=Disc	E=PES	D=D series	52=0.45+0.2 μm	5=Diameter 50 mm	B0=6 mm Hose barb connector

Package	Sterilization
6=6/PK	A=Autoclavable G=Gamma compatible S=Sterile

Nexpore® DHC Sterilizing-Grade Hydrophilic PES Filter

Product Speci ications - Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04	Nexcap® L5	Nexcap® L10	Nexcap® L20	Nexcap® L30
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm	92 mm	92 mm	92 mm	92 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm	132 mm	132 mm	132 mm	132 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm	211 mm	330 mm	575 mm	830 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)							
	Supporting Layer	Polypropylene (PP)							
	O-rings	Silicone							
	Core/Cage/End caps/Housing	Polypropylene (PP)							
Integrity Testing	Bubble Point	≥3520 mbar (51 psi) (wetted with H_2O, 20℃, compressed air)							
	Diffusion Flow	Test pressure 2760 mbar (40 psi) (20℃, compressed air)							
		-	≤2.5 mL/min	≤5.5 mL/min	≤9.5 mL/min	≤12.5 mL/min	≤25 mL/min	≤50 mL/min	≤75 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar (72.5 psi) @ 25℃/3.0 bar (43.5 psi) @ 80℃ Reverse:3.0 bar (43.5 psi) @ 25℃/1.0 bar (14.5 psi) @ 80℃							
	Sterilization Resistance	Autoclave(A&G): 131℃, 30 min, 5 cycles Gamma-compatible (G): 25-45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again				Autoclave(A&G): 131℃, 30 min, 10 cycles Gamma-compatible (G): 25-45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again			
	Effective Filtration Area	230 cm^2	430 cm^2	0.11 m^2	0.19 m^2	0.28 m^2	0.55 m^2	1.1 m^2	1.65 m^2
	Pore Size	0.45+0.2 μm							
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)							
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>							
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182							
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>							
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>							
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm							
	Manufacturing Integrity	100% integrity test passed							
	Manufacturing Environment	Manufactured in conformance with cGMP							

Ordering Information

Format
K=Capsule

Membrane material
E=PES

Membrane series
D=D series

Pore size
52=0.45+0.2 μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20
3: Nexcap® L30

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm (1/4"-1/2") Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable
G=Gamma compatible
S=Sterile

- **Connector:**

Alicap® L300/L600, available with B6 Connector; Nexcap® L02/L04, available with T1, T3, B5, B7 Connector; Nexcap® L5/L10/L20/L30, available with T1 Connector.

Nexpore® DHC Sterilizing-Grade Hydrophilic PES Filter

Product Specifications - Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone, Ethylene propylene diene monomer (EPDM)			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥3520 mbar (51 psi) (wetted with H_2O, 20℃, compressed air)			
	Diffusion Flow	Test pressure 2760 mbar (40 psi) (20℃, compressed air)			
		≤12.5 mL/min	≤25 mL/min	≤50 mL/min	≤75 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 7.0 bar (101.5 psi) @ 25℃/3.0 bar (43.5 psi) @ 80℃ Reverse: 3.0 bar (43.5psi) @ 25℃/1.0 bar (14.5 psi) @ 80℃			
	Sterilization Resistance	In-line steam: 135℃, 30 min, 50 cycles Autoclave: 135℃, 30 min, 50 cycles			
	Effective Filtration Area	0.28 m^2	0.55 m^2	1.1 m^2	1.65 m^2
	Pore Size	0.45+0.2 μm			
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	E=PES	D=D series	52=0.45+0.2 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins(5 inch)

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK(20&30 inch)

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Nexpore® DPHC High-Throughput Hydrophilic PES Pre ilter

Polyethersulfone（PES）

High Throughput

Particle Removal

Process Protection

Product Introduction

Lifeforge Nexpore® DPHC monolayer polyethersulfone (PES) prefilters are suitable for a variety of biopharmaceutical industry of process fluids with both cartridge and disposable capsule format available. This filter features validated excellent chemical compatibility, particle removal capabil-ities, and high throughput characteristics, protecting the sterilizing filter to optimize economic benefits.

Key Features and Benefits

- Highly asymmetric monolayer PES membrane
- High flux and high capacity
- Removal of particulate impurities
- Wide chemical compatibility (pH1-14)

Typical Applications

- Buffers
- Protective filtration before critical purification process
- Bacteria reduction filtration process for biological products

Nexpore® DPHC High-Throughput Hydrophilic PES Prefilter

Product Speci ications—Nexcap® L-type Capsule Filters

		Nexcap® L5	Nexcap® L10	Nexcap® L20
Product Specifications	Body Diameter	107 mm	107 mm	92 mm
	Maximum Width	138 mm	138 mm	132 mm
	Maximum Length	224 mm	363 mm	575 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)		
	Supporting Layer	Polypropylene (PP)		
	O-rings	Silicone		
	Core/Cage/End caps/Housing	Polypropylene (PP)		
Working Characteristics	Maximum Differential Pressure	Forward: 7.0 bar（101.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 3.0 bar（43.5 psi）@ 25℃/1.0 bar（14.5 psi）@ 80℃		
	Sterilization Resistance	Autoclave at 131℃ for 30 min, 15 cycles Gamma-compatible (G): 45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again		
	Effective Filtration Area	0.32 m^2	0.65 m^2	1.30 m^2
	Pore Size	0.45 μm、0.65 μm、1.2 μm		
	Biological Safety	All filter's construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>		
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182		
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>		
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>		
	TOC/Conductivity	Filtrate of this filter, TOC<0.5 mg/L, Conductivity<1.3 μS/cm		
	Manufacturing Integrity	100% integrity test passed		
	Manufacturing Environment	Manufactured in conformance with cGMP		

Ordering Information

Format
K=Capsule

Membrane material
E=PES

Membrane series
D=D series

Pore size
04=0.45 μm
06=0.65 μm
1U=1.2 μm

Length
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable
G=Gamma compatible
S=Sterile

Nexpore® DPHC High-Throughput Hydrophilic PES Prefilter

Product Specifications—Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	155 mm	318 mm	566 mm	813 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Working Characteristics	Maximum Differential Pressure	Forward: 7.0 bar（101.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 3.0 bar（43.5 psi）@ 25℃/1.0 bar（14.5 psi）@ 80℃			
	Sterilization Resistance	Steam in place at 135℃ for 30 min, 50 cycles Autoclave at 135℃ for 30 min, 50 cycles			
	Effective Filtration Area	0.32 m^2	0.65 m^2	1.30 m^2	1.95 m^2
	Pore Size	0.45 μm、0.65 μm、1.2 μm			
	Biological Safety	All filter's construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	Filtrate of this filter, TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format
C=Cartridge

Membrane material
E=PES

Membrane series
D=D series

Pore size
04=0.45 μm
06=0.65 μm
1U=1.2 μm

Length
5=5 inch
1=10 inch
2=20 inch
3=30 inch

Catridge adaptor
7=226, Spearhead with fins
2=226, Flat end with fins

O-ring
S=Silicone
T=EPDM

Package
1=1/PK
3=3/PK(20&30 inch)

Nexpore® DHF High-Throughput Hydrophilic PES Filter Polyethersulfone (PES)

Bioburden Control
High Flowrate
Wide Compatibility

Product Introduction

Lifeforge Nexpore® DHF Single-layer Cartridge Filter is a 0.2 μm single-layer polyethersulfone (PES) filter that can efficiently retain bacteria and particulate contaminants. It has wide chemical compatibility and low leaching level, thus suitable for the bioburden control and pre-filtration of various fluids. It can provide more effective protection at different stages of bioprocess, prolonging the service life of sterilizing filters and safeguarding other processing systems. This filter is produced in a controlled environment, and its manufacturing process conforms to ISO9001 quality system standards. Each cartridge filter undergoes an integrity testing during the process of manufacturing.

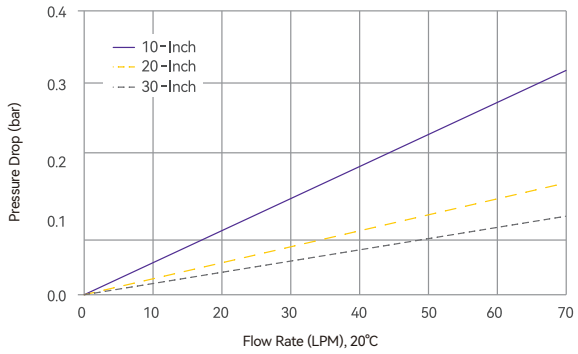
Key Features and Benefits

- High flow rate, high capacity
- Bioburden control
- Resistance to multiple steam sterilization
- Wide chemical compatibility

Typical Applications

- Terminal sterilization product
- Intermediate products filtration
- Pre-column protective filtration
- Pre-filtration before final sterile filtration, etc.

Typical Flow Characteristics



Nexpore® DHF High-Throughput Hydrophilic PES Filter

Product Specifications

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥3180 mbar（46 psi）(wetted with H_2O, 20℃, compressed air)			
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/1.5 bar（21.75 psi）@ 80℃ Reverse: 2.0 bar（29 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 135℃, 30 min,10 cycles Autoclave: 135℃, 30 min, 20 cycles			
	Effective Filtration Area	0.32 m^2	0.66 m^2	1.32 m^2	1.98 m^2
	Pore Size	0.2 μm			
	Bacterial Retention	TR>10^6 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	E=PES	D=D series	02=0.2 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK (20&30 inch)

Nexpore® CHC Sterilizing-Grade Hydrophilic PES Filter Polyethersulfone（PES）

High Capacity
High Flowrate
Wide Compatibility

Product Introduction

Lifeforge Nexpore® CHC double-layer polyethersulfone (PES) filters are suitable for a variety of sterile filtration of process fluids with both cartridge and disposable capsule format available. The filter has passed strict sterilization performance validation. It features a built-in pre-filtration layer to achieve high flow rate and capacity, and thereby optimize your process efficiency and cost effectiveness.

Key Features and Benefits

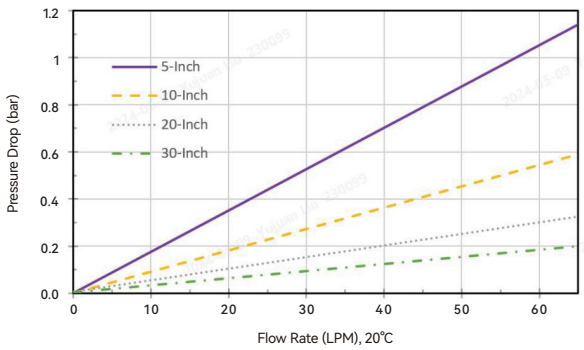
- Highly asymmetric double-layer PES membrane
- High flux and high capacity
- Reliable bacterial retention performance
- Wide chemical compatibility (pH1-14)
- 100% integrity test passed

Typical Applications

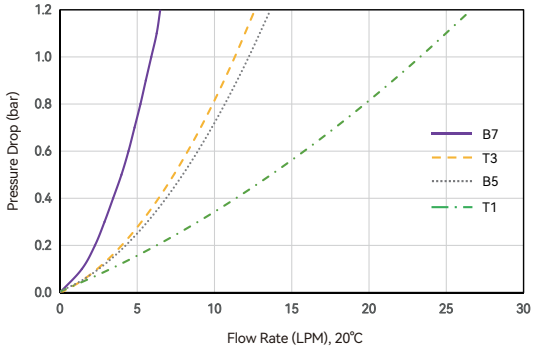
- Buffer Filtration
- Final Filling Filtration
- Cell Culture Media Filtration
- Process Intermediates Filtration

Typical Flow Characteristics

Water Flow Rate and Pressure Drop-Nexpore® CHC 0.45+0.2 μm Cartridge Filters



Water Flow Rate and Pressure Drop-Lifeforge Nexpore® CHC 0.45 +0.2 μm N excap® L04 Capsule Filters



*T1, T3, B5, B7 represent different interface types, see order information for details.

Nexpore® CHC Sterilizing-Grade Hydrophilic PES Filter

Product Specifications—Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04	Nexcap® L5	Nexcap® L10	Nexcap® L20
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm	107 mm	107 mm	92 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm	147 mm	147 mm	132 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm	224 mm	362 mm	575 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)						
	Supporting Layer	Polypropylene (PP)						
	O-rings	Silicone						
	Core/Cage/End caps/Housing	Polypropylene (PP)						
Integrity Testing	Bubble Point	≥3520 mbar（51 psi）(wetted with H_2O, 20℃, compressed air)						
	Diffusion Flow	Test pressure 2760 mbar (40 psi) (20℃, compressed air)						
		-	≤ 2.5 mL/min	≤5.5 mL/min	≤9.5 mL/min	≤12.5 mL/min	≤25 mL/min	≤50 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃						
	Sterilization Resistance	Autoclave(A&G): 131℃, 30 min, 3 cycles Gamma-compatible (G): 25-45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again				Autoclave(A&G): 131℃, 30 min, 5 cycles Gamma-compatible (G): 25-45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again		
	Effective Filtration Area	230 cm^2	430 cm^2	0.11 m^2	0.19 m^2	0.3 m^2	0.6 m^2	1.2 m^2
	Pore Size	0.45+0.2 μm						
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)						
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>						
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182						
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>						
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>						
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm						
	Manufacturing Integrity	100% integrity test passed						
	Manufacturing Environment	Manufactured in conformance with cGMP						

Ordering Information

Format
K=Capsule

FB:Internal coding method

Membrane material
E=PES

Membrane series
C=C series

Pore size
52=0.45+0.2μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm（1/4"-1/2") Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable
G=Gamma compatible
S=Sterile

- **Connector:**
  Nexcap® L300/L600, available with B6 Connector; Alicap® L02/L04, available with T1, T3, B5, B7 Connector; Alicap® L5/L10/L20, available with T1 Connector.

Nexpore® CHC Sterilizing-Grade Hydrophilic PES Filter

Product Specifications—Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥3520 mbar（51 psi）(wetted with H_2O, 20℃, compressed air)			
	Diffusion Flow	Test pressure 2760 mbar (40 psi)（20℃, compressed air）			
		≤12.5 mL/min	≤25 mL/min	≤50 mL/min	≤75 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 136℃, 30 min, 30 cycles Autoclave: 131℃, 30 min, 30 cycles			
	Effective Filtration Area	0.3 m^2	0.6 m^2	1.2 m^2	1.8 m^2
	Pore Size	0.45+0.2 μm			
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	E=PES	C=C series	52=0.45+0.2 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK(20&30 inch)

www.lifeforgeventures.com

Nexpore® CHC High-Capacity Hydrophilic PES Prefilter Polyethersulfone（PES）

High Throughput
Bioburden Control
Process Protection

Product Introduction

Lifeforge Nexpore® CHC double-layer polyethersulfone (PES) filters are suitable for a variety of protective filtration of process fluids with both car-tridge and disposable capsule format available. This filter features high throughput, effectively reducing microbial load and removing particu-late contaminants. It protects downstream high-precision purification or filtration processes, helping customers achieve optimal economic benefits.

Key Features and Benefits

- Highly asymmetric double-layer PES membrane
- High flux and increased capacity
- Bioburden control
- Reliable particles removal efficiency
- Wide chemical compatibility (pH1-14)

Typical Applications

- Buffers
- Protective filtration before critical purification process
- Bacteria reduction filtration process for biological products

Nexpore® CHC High-Capacity Hydrophilic PES Prefilter

Product Speci ications—Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04	Nexcap® L5	Nexcap® L10	Nexcap® L20
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm	107 mm	107 mm	92 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm	147 mm	147 mm	132 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm	224 mm	362 mm	575 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)						
	Supporting Layer	Polypropylene (PP)						
	O-rings	Silicone						
	Core/Cage/End caps/Housing	Polypropylene (PP)						
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃						
	Sterilization Resistance	Autoclave(A&G): 131℃, 30 min, 3 cycles Gamma-compatible (G): 45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again				Autoclave(A&G): 131℃, 30 min, 5 cycles Gamma-compatible (G): 45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again		
	Effective Filtration Area	230 cm^2	430 cm^2	0.11 m^2	0.19 m^2	0.28 m^2	0.55 m^2	1.1 m^2
	Pore Size	0.8+0.45 μm、1.2+0.45 μm						
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>						
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182						
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>						
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>						
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm						
	Manufacturing Integrity	100% integrity test passed						
	Manufacturing Environment	Manufactured in conformance with cGMP						

Ordering Information

Format
K=Capsule

FB:Internal coding method

Membrane material
E=PES

Membrane series
C=C series

Pore size
85=0.8+0.45 μm
15=1.2+0.45 μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm（1/4"-1/2"）Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable
G=Gamma compatible
S=Sterile

- **Connector:**

Alicap® L300/L600, available with B6 Connector; Alicap® L02/L04, available with T1, T3, B5, B7 Connector; Alicap® L5/L10/L20, available with T1 Connector.

Nexpore® CHC High-Capacity Hydrophilic PES Prefilter

Product Specifications—Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 136℃, 30 min, 30 cycles Autoclave: 131℃, 30 min, 30 cycles			
	Effective Filtration Area	0.28 m^2	0.55 m^2	1.1 m^2	1.65 m^2
	Pore Size	0.8+0.45 μm、1.2+0.45 μm			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format
C=Cartridge

Membrane material
E=PES

Membrane series
C=C series

Pore size
85=0.8+0.45 μm
15=1.2+0.45 μm

Length
5=5 inch
1=10 inch
2=20 inch
3=30 inch

Catridge adaptor
7=226, Spearhead with fins
2=226, Flat end with fins

O-ring
S=Silicone
T=EPDM

Package
1=1/PK
3=3/PK(20&30 inch)

Nexpore® CHF High-Flowrate Hydrophilic PES Prefilter Polyethersulfone (PES)

Protective Filtration
High Capacity
Wide Compatibility

Product Introduction

Lifeforge Nexpore® CHF PES prefilters can provide effective bioburden control and particle contaminants removal with good chemical compatibility and low extractable. **Nexpore®** CHF filters are suitable for bioburden control and prefiltration application of various kind of fluid, provide effective protection to downstream sterilizing-grade filter and other processsystem in different steps of bioprocess. Meet the common needs of the pharmaceutical industry for liquid pre-filtration.

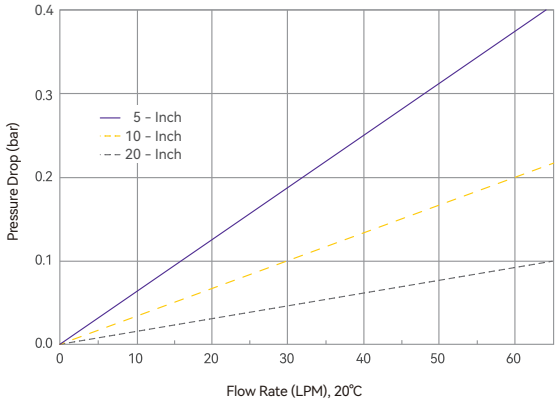
Key Features and Benefits

- Excellent Chemical Compatibility
- Bioburden control
- High flow rate, high capacity
- Resistance to multiple steam sterilization

Typical Applications

- Buffer prefiltration
- Culture medium prefiltration
- Pre-column protective filtration
- Pre-filtration before final sterile filtration

Typical Flow Characteristics



Nexpore® CHF High-Flowrate Hydrophilic PES Prefilter

Product Specifications—Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Hydrophilic polyethersulfone (PES)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 135℃, 30 min,10 cycles Autoclave: 135℃, 30 min, 10 cycles			
	Effective Filtration Area	0.32 m^2	0.65 m^2	1.3 m^2	1.95 m^2
	Pore Size	0.45 μm			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	E=PES	C=C series	04=0.45 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK (20&30 inch)

Nexgard® MHF High-Flowrate Hydrophilic MCE Pre ilter

Mixed Cellulose Ester (MCE)

High Flowrate
High Capacity
High Dirt-holding Capacity

Product Introduction

Lifeforge Nexgard® MHF Single-layer Cartridge Filter is made from mixed cellulose ester. It has a sturdy structure and stable material. It can effi-ciently retain pollutants, effectively remove particles and colloidal contaminants, block no important active ingredients, protect downstream filtration equipment, and prevent premature clogging.

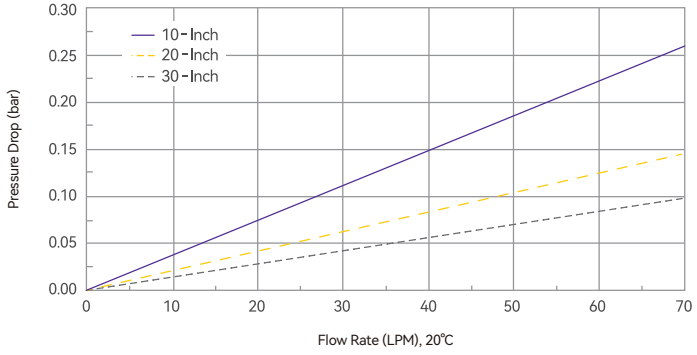
Key Features and Benefits

- High flow rate
- High capacity
- Non-fiber release
- Resistance to multiple steam sterilization

Typical Applications

- Culture media and buffer prefiltration
- LVP/SVP prefiltration
- Plasma product prefiltration
- Pre-column protective filtration

Typical Flow Characteristics



Nexgard® MHF High-Flowrate Hydrophilic MCE Prefilter

Product Specifications

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Mixed Cellulose Ester (MCE)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/1.5 bar（21.75 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 121℃, 30 min,5 cycles Autoclave: 121℃, 30 min,5 cycles			
	Effective Filtration Area	0.32 m^2	0.68 m^2	1.32 m^2	2.04 m^2
	Pore Size	0.45 μm			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	M=MCE	B=B series	04=0.45 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end witah fins

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK(20&30 inch)

Nexsafe® TCHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Hydrophobic Polytetrafluoroethylene (PTFE)

Sterilizing-grade gas filters

Non-aqueous liquid filtration

Product Introduction

The **Lifeforge Nexsafe®** TCHF series features a hydrophobic and chemically inert PTFE (polytetrafluoroethylene) filter membrane. This product efficiently retains microorganisms and particles in wet or humid gas through stringent liquid bacteria retention verification. It offers high strength and resistance to multiple steam sterilizations in place. The TCHF series is suitable for sterile gas filtration and organic solvent filtration with strict quality requirements in pharmaceutical applications.

Key Features and Benefits

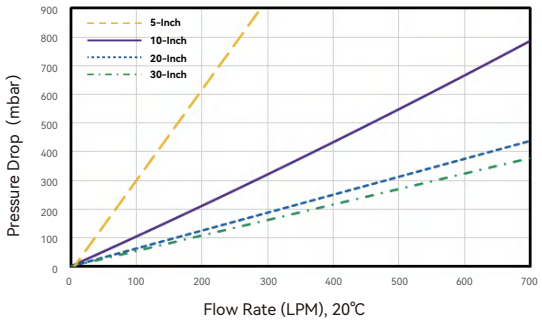
- Natural hydrophobic material
- High gas flux and low-pressure drop
- Reliable bacterial/particles removal efficiency
- Excellent chemical compatibility
- Resistance to multiple steam sterilization

Typical Applications

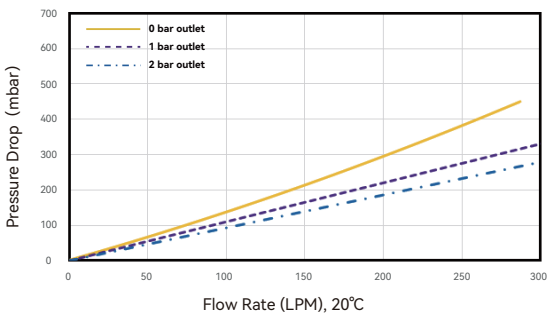
- Bioreactors (inlet | outlet)
- Storage tank venting
- Filling equipment venting
- Freeze dryer
- Autoclave venting
- Sterile filtration of organic solvents

Typical Flow Characteristics

Air Flow Rate and Pressure Drop-**Nexsafe®** TCHF 0.2 µm Cartridge Filters



Air Flow Rate and Pressure Drop-**Nexsafe®** TCHF **Nexcap®** L10 0.2µm Capsule Filters



www.lifeforgeventures.com

Nexsafe® TCHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Product Speci ications—Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04	Nexcap® L3	Nexcap® L5	Nexcap® L10	Nexcap® L20
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm	97 mm	107 mm	107 mm	92 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm	128 mm	147 mm	147 mm	132 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm	170 mm	224 mm	362 mm	575 mm
Materials of Construction	Membrane	Polytetrafluoroethylene (PTFE)							
	Supporting Layer	Polypropylene (PP)							
	O-rings	Silicone							
	Core/Cage/End caps/Housing	Polypropylene (PP)							
Integrity Testing	Bubble Point	≥1300 mbar（18.9 psi）(wetted with 60% IPA, 20℃, compressed air)							
	Diffusion Flow	Test pressure 1040 mbar (15 psi)（wetted with 60% IPA, 20℃, compressed air)							
		≤0.75 mL/min	≤1.5 mL/min	≤3 mL/min	≤4 mL/min	≤4.5 mL/min	≤6.5 mL/min	≤13 mL/min	≤26 mL/min
	Water Intrusion	Test pressure 2500 mbar (36.0 psi)（20℃, compressed air)							
		≤0.03 mL/min	≤0.05 mL/min	≤0.1 mL/min	≤0.15 mL/min	≤0.17 mL/min	≤0.25 mL/min	≤0.5 mL/min	≤1 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.5 bar（79.6 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃							
		Reverse: 4.0 bar（58.0 psi）@ 25℃/1.0 bar（14.5 psi）@ 80℃							
	Sterilization Resistance	Autoclave(A): 135℃, 30 min, 30 cycles *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again					Autoclave(A): 135℃, 30 min, 50 cycles *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again		
	Filtration Area	260 cm^2	480 cm^2	0.1 m^2	0.2 m^2	0.22 m^2	0.33 m^2	0.65 m^2	1.3 m^2
	Pore Size	0.2 μm							
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)							
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>							
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182							
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>							
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>							
	Manufacturing Integrity	100% integrity test passed							
	Manufacturing Environment	Manufactured in conformance with cGMP							

Ordering Information

Format
K=Capsule

Membrane material
T=PTFE

Membrane series
C=C series

Pore size
02=0.2 μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04
L3: Nexcap® L3
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B4:13mm(1/2") Single stage hose inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm（1/4"-1/2") Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable

- **Connector:**
Alicap® L300/L600, available with B6 Connector; Alicap® L02/L04, available with T1, T3, B5, B7 Connector; Nexcap® L3/L5/L10/L20, available with T1, B4 Connector.

www.lifeforgeventures.com

Nexsafe® TCHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Product Specifications—Cartridge Filters

Product Specifications		5inch	10inch	20inch	30inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Polytetrafluoroethylene (PTFE)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥1300 mbar（19 psi）(wetted with 60% IPA, 20℃, compressed air)			
	Diffusion Flow	Test pressure 1040 mbar (15 psi)（wetted with 60% IPA, 20℃, compressed air ）			
		≤6.5 mL/min	≤13 mL/min	≤26 mL/min	≤39 mL/min
	Water Intrusion	Test pressure 2500 mbar (36 psi)（20℃, compressed air ）			
		≤0.25 mL/min	≤0.5 mL/min	≤1.0 mL/min	≤1.5 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 7.0 bar（101.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 4.0 bar (58.0 psi）@ 25℃/1.0 bar (14.5 psi）@ 80℃			
	Sterilization Resistance	Steam in place at 142℃ for 30 min, 150 cycles (100 forward cycles plus 50 reverse cycles) Autoclave at 135℃ for 30 min, 200 cycles			
	Effective Filtration Area	0.33 m^2	0.65 m^2	1.30 m^2	1.95 m^2
	Pore Size	0.2 μm			
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	T=PTFE	C=C series	02=0.2 μm	5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins

O-ring	Package
S=Silicone T=EPDM	1=1/PK 3=3/PK(20&30 inch)

Nexpore® TAHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Hydrophobic Polytetrafluoroethylene (PTFE)

Sterilizing-grade gas filters

Non-aqueous liquid filtration

Product Introduction

The **Lifeforge Nexpore®** TAHF series features a hydrophobic and chemically inert PTFE (polytetrafluoroethylene) filter membrane. This product effi-ciently retains microorganisms and particles in wet or humid gas through stringent liquid bacteria retention verification. It offers high strength and resistance to multiple steam sterilizations in place. The TAHF series are suitable for sterile gas filtration and organic solvent filtration with strict quality requirements in pharmaceutical applications.

Key Features and Benefits

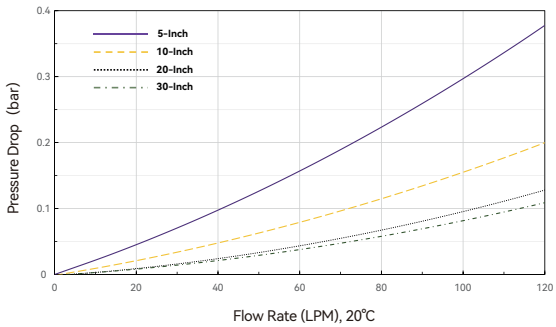
- Natural hydrophobic material
- High gas flux and low-pressure drop
- Reliable bacterial/particles removal efficiency
- Excellent chemical compatibility

Typical Applications

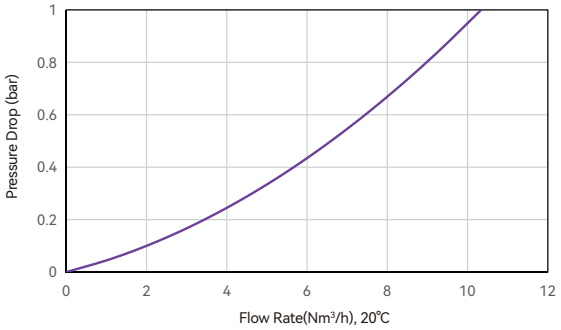
- Sterile gas filtration
- Sterile filtration of organic solvents vent

Typical Flow Characteristics

Air Flow Rate and Pressure Drop-**Nexpore®** TAHF 0.2 μm Cartridge Filters



Air Flow Rate and Pressure Drop-**Nexpore®** TAHF 0.2 μm **Nexcap®** L300 Capsule Filters



Nexpore® TAHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Product Speci ications—Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm
Materials of Construction	Membrane	Polytetrafluoroethylene (PTFE)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone			
	Core/Cage/End caps/Housing	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥1200 mbar（17.4 psi）(wetted with 60% IPA, 20℃, compressed air)			
	Diffusion Flow	Test pressure 1040 mbar (15 psi)（wetted with 60% IPA, 20℃, compressed air)			
		-	≤1.2 mL/min	≤3.1 mL/min	≤5.2 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	Autoclave(A): 131℃, 30 min, 10 cycles			
	Effective Filtration Area	380 cm^2	670 cm^2	0.17 m^2	0.28 m^2
	Pore Size	0.2 μm			
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format
K=Capsule

FB:Internal coding method

Membrane material
T=PTFE

Membrane series
A=A series

Pore size
02=0.2 μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm（1/4"-1/2") Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable

- **Connector:**
  Nexcap® L300/L600, available with B6 Connector; Nexcap® L02/L04, available with T1, T3, B5, B7 Connector.

Nexpore® TAHF Sterilizing-Grade Hydrophobic PTFE Gas Filter

Product Specifications—Cartridge Filters

Product Specifications		5inch	10inch	20inch	30inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Polytetrafluoroethylene (PTFE)			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥1200 mbar（17.4 psi）(wetted with 60% IPA, 20℃, compressed air)			
	Diffusion Flow	Test pressure 1040 mbar (15 psi)（wetted with 60% IPA ,20℃, compressed air)			
		≤6.5 mL/min	≤13 mL/min	≤26 mL/min	≤39 mL/min
	Water Intrusion	Test pressure 2500 mbar (36 psi) （20℃, compressed air)			
		≤0.25 mL/min	≤0.5 mL/min	≤1.0 mL/min	≤1.5 mL/min
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Sterilization Resistance	In-line steam: 135℃, 60 min, 25 cycles Autoclave: 135℃, 60 min, 25 cycles			
	Effective Filtration Area	0.35 m^2	0.7 m^2	1.4 m^2	2.1 m^2
	Pore Size	0.2 μm			
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format
C=Cartridge

Membrane material
T=PTFE

Membrane series
A=A series

Pore size
02=0.2 μm

Length
5=5 inch
1=10 inch
2=20 inch
3=30 inch

Catridge adaptor
7=226, Spearhead with fins
2=226, Flat end with fins

O-ring
S=Silicone
T=EPDM

Package
1=1/PK
3=3/PK(20&30 inch)

www.lifeforgeventures.com

Nexpore® TEHF Radiation-Resistant Gas Filter Hydrophobic Polyethersulfone（PES）

Sterilizing-grade gas filters

Product Introduction

Nexpore® TEHF Series filters consist of hydrophobic polyethersulfone (PES) membranes and have undergone rigorous liquid bacterial retention validation. They effectively retain microorganisms or particles in wet or humid gases, featuring high mechanical strength, radiation resistance, and tolerance to repeated autoclaving cycles. Ideal for sterile gas filtration in single-use systems for pharmaceutical applications, including sterilization of air, hydrogen, nitrogen, and other gases.

Key Features and Benefits

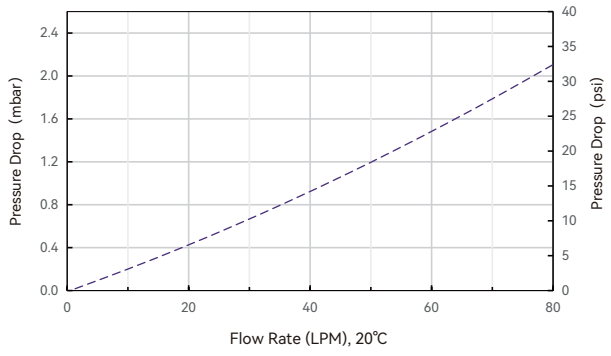
- Hydrophobic material
- Tolerance to 45 kGy gamma irradiation
- Reliable bacterial retention and particle removal efficiency
- High gas flux with low pressure differential
- Excellent chemical compatibility

Typical Applications

- Vent filter for single-use bags
- Aeration of single-use reaction bags
- Sterile filtration of gases (air/hydrogen/nitrogen, etc.)

Typical Flow Characteristics

Air Flow Rate and Pressure Drop-Nexpore® TEHF 0.2 μm Disc Filters



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Nexpore® TEHF Radiation-Resistant Gas Filter

Product Specifications—Disc Filters

Product Specifications	Diameter	50 mm
Materials of Construction	Membrane	Hydrophobic polyethersulfone (PES)
	Inlet/Outlet Cap、Supporting layer	Polypropylene (PP)
Integrity Testing	Bubble Point	≥1300 mbar（19 psi）(wetted with 60% IPA, 20℃, compressed air)
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃ Reverse: 1.0 bar (14.5 psi）@ 80℃
	Sterilization Resistance	Gamma-compatible (G): 25-45 kGy Autoclave at 135℃ for 30 min, 50 cycles *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again
	Effective Filtration Area	18 cm^2
	Pore Size	0.2 μm
	Bacterial Retention	>10^7 cfu/cm^2 B. *diminuta* (ATCC® 19146™)
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>
	Manufacturing Integrity	100% integrity test passed
	Manufacturing Environment	Manufactured in conformance with cGMP

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Disc adaptor
D=Disc	E=PES	E=E series	02=0.2 μm	5=Diameter 50 mm	B0=6 mm Hose barb connector

Package	Sterilization
6=6/PK	G=Gamma compatible S=Sterile

www.lifeforgeventures.com

Nexgard® PHF High-Performance PP Clarifying Filter Polypropylene (PP)

High Dirt-Holding Capacity

Clarification Filtration

Process Economics

Product Introduction

Polypropylene (PP) membrane is suitable for depth filtration with stable physical and chemical properties and strong pressure resistance. **Lifeforge** prefilters are made of PP with high porosity and strong dirt-holding capacity. The filters are ideal for removing particles and microorganisms from a broad range of challenging pharmaceutical liquids in prefiltration process.

Key Features and Benefits

- Excellent chemical capability
- High retention efficiency
- High flow rate and low flow differential pressure
- No fiber releasing
- Robust with stable performance
- Stable performance and sturdy durability
- Traceable
- Resistance to multiple steam sterilization

Typical Applications

- Intermediate products prefiltration
- Blood products prefiltration
- Culture media prefiltration
- Prefiltration during the solution preparation process

Nexgard® PHF High-Performance PP Clarifying Filter

Product Specifications—Disc Filters

Product Specifications	Nominal Dimensions	64 mm
Materials of Construction	Membrane	Polypropylene (PP)
	Supporting layer/Housing	Polypropylene (PP)
Working Characteristics	Highest Working Temperature	60℃
	Max Inlet Pressure	3.5 bar（50 psi）@ 25℃
	Sterilization Resistance	Autoclave: 126℃，30 min，5 cycles
	Max Differential Pressure	Forward: 4.0 bar @ 25℃, 1.0 bar @ 60℃, Not applicable for Reverse Filtration
	Effective Filtration Area	19.6 cm^2
	Pore Size	0.1 μm/0.2 μm/0.5 μm/1.0 μm/3.0 μm/5.0μm/10.0 μm/20.0 μm/50.0 μm/100 μm
	Connection Type	HB 7-13 mm
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>
	Quality System	Manufactured in a facility whose Quality Management System has been certified with ISO 9001
	Shelf Life	3 years at 10-35℃ and below 70% humidity

Ordering Information

HAD	T	P	0	1	D	5	H	6	A	1	0
Product HAD=Disc	Membrane Material TP=PP		Pore Size 01=0.1 μm 02=0.2 μm 04=0.5 μm 1 U= 1.0 μm 3 U= 3.0 μm 5 U=5.0 μm 10=10 μm 20=20 μm 50=50 μm 100=100 μm		Size D5=ID 50		Connection Type H6=6 mm HB		Sterilization A=Autoclavable	Package 10=10/PK	

Nexgard® PHF High-Performance PP Clarifying Filter

Product Specifications—Capsule Filters

Product Specifications		1 inch	2 inch	4 inch	5 inch	10 inch	20 inch
Product Specifications	Membrane	Polypropylene (PP)					
	Supporting layer/Housing	Polypropylene (PP)					
	O-rings	Silicone					
Materials of Construction	Highest Working Temperature	60℃					
	Max Inlet Pressure	5.5 bar（80 psi）@ 25℃					
	Sterilization Resistance	Autoclave: 126℃，30min，5 cycles					
	Max Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃，Reverse: 2.0 bar（29 psi）@ 25℃ Forward: 4.0 bar（58 psi）@ 60℃，Reverse: 1.0 bar（14.5 psi）@ 60℃					
	Effective Filtration Area	0.03 m^2	0.1 m^2	0.2 m^2	0.25 m^2	0.5 m^2	1.0 m^2
	Pore Size	0.1 μm/0.2 μm/0.5 μm/1.0 μm/3.0 μm/5.0 μm/10.0 μm/20.0 μm/50.0 μm/100 μm					
	Connection Type	TC 25 mm or HB 7-13 mm	TC 25 mm or HB 7-13 mm	TC 50 mm	TC 50 mm	TC 50 mm	TC 50 mm
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>					
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>					
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>					
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm					
	Quality System	Manufactured in a facility whose Quality Management System has been certified with ISO 9001					
	Shelf Life	3 years at 10-35℃ and below 70% humidity					

Ordering Information

HAK	T	P	0	1	0	2	0	1	S	A	1
Product HAK=Capsule	Membrane Material TP=PP		Pore Size 01=0.1 μm 02=0.2 μm 04=0.5 μm 1 U=1.0 μm 3 U=3.0 μm 5 U=5.0 μm 10=10 μm 20=20 μm 50=50 μm 100=100 μm		Size 01=1 inch 02=2 inch 05=5 inch 10=10 inch 20=20 inch 30=30 inch		Connection Type T2=25 mm TC H7=7-13 HB T5=50 mm TC		O-ring S=Silicone	Sterilization A=Autoclavable	Package 1=1/PK

Nexgard® PHF High-Performance PP Clarifying Filter

Product Specifications—Cartridge Filters

Product Specifications		2.5 inch	5 inch	10 inch	20 inch	30 inch
	Nominal Dimensions	69 mm*2.5″	69 mm*5″	69 mm*10″	69 mm*20″	69 mm*30″
Materials of Construction	Membrane	Polypropylene (PP)				
	Supporting layer/Adaptor	Polypropylene (PP)				
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）、Ternary fluorine rubber				
Materials of Construction	Highest Working Temperature	60℃				
	Max Inlet Pressure	5.5 bar（80 psi）@ 25℃				
	Sterilization Resistance	Autoclave: 126℃，30min，30 cycles				
	Max Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃，Reverse: 2.0 bar（29 psi）@ 25℃ Forward: 4.0 bar（58 psi）@ 60℃，Reverse: 1.0 bar（14.5 psi）@ 60℃				
	Effective Filtration Area	0.12 m^2	0.25 m^2	0.5 m^2	1.0 m^2	1.5 m^2
	Pore Size	0.1 μm/0.2 μm/0.5 μm/1.0 μm/3.0 μm/5.0 μm/10.0 μm/20.0 μm/50.0 μm/100 μm				
	Adaptor Type	226/222/215				
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>				
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>				
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>				
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm				
	Quality System	Manufactured in a facility whose Quality Management System has been certified with ISO 9001				
	Shelf Life	3 years at 10-35℃ and below 70% humidity				

Ordering Information

HAC	T	P	0	1	0	2	7	S	A	1
Product HAC=Cartridge	Membrane Material TP=PP		Pore Size 01=0.1 μm 02=0.2 μm 04=0.5 μm 1 U=1.0 μm 3 U=3.0 μm 5 U=5.0 μm 10=10 μm 20=20 μm 50=50 μm 100=100 μm		Size 02=2.5 inch 05=5 inch 10=10 inch 20=20 inch 30=30 inch		Adaptor Type 7=226, Spearhead with fins 2=226, Flat end with fins 8=222, Spearhead with fins 3=222 , Flat end with fins 9=215, Spearhead with fins 4=215, Flat end with fins	O-ring S=Silicone T=EPDM B=Ternary Fluorine Rubber	Sterilization A=Autoclavable	Package 1=1/PK

www.lifeforgeventures.com

SHF Polysulfone Membrane Filter

Polysulfone（PSF）

High Throughput

Process Economics

Reduced Process Time

Product Introduction

Lifeforge SHF polysulfone (PSF) filters feature a highly asymmetrical polysulfone (PSF) membrane and pleated construction for high flow and low pressure drop. It has good high temperature resistance and wide chemical compatibility. It is suitable for pre- and final filtration of process cooling and deionized water, and is widely used in the pharmaceutical industry and chemicals.

Key Features and Benefits

- High flow, low differential pressure
- Wide chemical compatibility
- Excellent high temperature resistance

Typical Applications

- Pre-filtration and final filling filtration of chemicals
- Pre-filtration and final filling filtration in the pharmaceutical industry
- Pre-filtration and finala filling filtration of process cooling water
- Pre-filtration and final filling filtration of deionized water

SHF Polysulfone Membrane Filter

Product Speci ications—Nexcap® L-type Capsule Filters

		Nexcap® L300	Nexcap® L600	Nexcap® L02	Nexcap® L04	Nexcap® L5	Nexcap® L10	Nexcap® L20
Product Specifications	Body Diameter	67 mm	67 mm	72 mm	72 mm	85 mm	85 mm	85 mm
	Maximum Width	77 mm	77 mm	96 mm	96 mm	147 mm	147 mm	147 mm
	Maximum Length	100.5 mm	122 mm	164 mm	217 mm	220 mm	319 mm	569 mm
Materials of Construction	Membrane	Polysulfone（PSF）						
	Supporting Layer	Polypropylene (PP)						
	O-rings	Silicone						
	Core/Cage/End caps/Housing	Polypropylene (PP)						
Integrity Testing	Bubble Point	≥4000 mbar（58 psi）(wetted with H_2O, 20℃, compressed air)（0.2 μm）						
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃						
	Sterilization Resistance	Autoclave(A&G): 131℃, 30 min, 3 cycles Gamma-compatible (G): 45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again				Autoclave(A&G): 131℃, 30 min, 5 cycles Gamma-compatible (G): 45 kGy *Capsule filters can't be sterilized by SIP, sterile type capsule filters can't be sterilized again		
	Effective Filtration Area	200 cm^2	400 cm^2	0.12 m^2	0.24 m^2	0.3 m^2	0.6 m^2	1.2 m^2
	Pore Size	0. 2 μm/0.45 μm						
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>						
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182						
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>						
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>						
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm						
	Manufacturing Integrity	100% integrity test passed						
	Manufacturing Environment	Manufactured in conformance with cGMP						

Ordering Information

Format
K=Capsule

FB:Internal coding method

Membrane material
S=PSF

Membrane series
A=A series

Pore size
02=0.2 μm
04=0.45 μm

Length
S2: Nexcap® L300
S3: Nexcap® L600
M1: Nexcap® L02
M3: Nexcap® L04
5: Nexcap® L5
1: Nexcap® L10
2: Nexcap® L20

Capsule connector
T1: 38 mm(1 1/2") Sanitary flange inlet and outlet
T3: 19 mm(3/4") Sanitary flange inlet and outlet
B5: 13 mm(1/2") Multistage hose inlet and outlet
B6: 7-13 mm（1/4"-1/2"）Hose barb inlet and outlet
B7: 6 mm(1/4") Multistage hose inlet and outlet

O-ring
S=Silicone

Package
1=1/PK

Sterilization
A=Autoclavable
G=Gamma compatible
S=Sterile

- **Connector:**
  Nexcap® L300/L600, available with B6 Connector; Nexcap® L02/L04, available with T1, T3, B5, B7 Connector; Nexcap® L5/L10/L20, available with T1 Connector.

www.lifeforgeventures.com

SHF Polysulfone Membrane Filter

Product Specifications—Cartridge Filters

Product Specifications		5 inch	10 inch	20 inch	30 inch
	Diameter	69 mm	69 mm	69 mm	69 mm
	Maximum Length	150 mm	320 mm	560 mm	800 mm
Materials of Construction	Membrane	Polysulfone（PSF）			
	Supporting Layer	Polypropylene (PP)			
	O-rings	Silicone、Ethylene propylene diene monomer（EPDM）、Ternary fluorine rubber			
	Core/Cage/End caps/Adaptor	Polypropylene (PP)			
Integrity Testing	Bubble Point	≥4000 mbar（58 psi）(wetted with H_2O, 20℃, compressed air）(0.2 μm)			
Working Characteristics	Maximum Differential Pressure	Forward: 5.0 bar（72.5 psi）@ 25℃/3.0 bar（43.5 psi）@ 80℃ Reverse: 2.0 bar（29.0 psi）@ 25℃			
	Effective Filtration Area	0.3 m^2	0.6 m^2	1.2 m^2	1.8 m^2
	Pore Size	0.2 μm/0.45 μm			
	Biological Safety	All construction components meet the biological safety requirements refering to USP<88> Class VI plastic and USP<87>			
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in EU 1935/2004/EC and FDA 21 CFR 177-182			
	Cleanliness	Meets the requirements for a 'non-fiber releasing' filter defined in FDA 21 CFR 211.72 and 210.3 (b) (5) (6), and particulate matter meets the requirements of USP<788>			
	Endotoxin	Endotoxin<0.25 EU/mL by LAL test method, which complies with the requirements of USP<85>			
	TOC/Conductivity	TOC<0.5 mg/L, Conductivity<1.3 μS/cm			
	Manufacturing Integrity	100% integrity test passed			
	Manufacturing Environment	Manufactured in conformance with cGMP			

Ordering Information

Format	Membrane material	Membrane series	Pore size	Length	Catridge adaptor
C=Cartridge	S=PSF	A=A series	02=0.2 μm 04=0.45 μm	0=2.5 inch 5=5 inch 1=10 inch 2=20 inch 3=30 inch	7=226, Spearhead with fins 2=226, Flat end with fins 8=222, Spearhead with fins 3=222 , Flat end with fins 9=215, Spearhead with fins 4=215, Flat end with fins

O-ring	Package	
S = Silicone T = EPDM B =Ternary Fluorine Rubber	1=1/ PK 3=3/PK(20&30 inch)	A

BrilliFlow® Disposable Vacuum Filtration Device

High Retention
Low Adsorption
Easy Operation
Gamma Sterilization

Key Features and Benefits

- Available in 4 sizes: 150 mL/250 mL/500 mL/1000 mL, which can meet the requirements for handling different volumes of samples
- Utilize the latest generation of highly asymmetric pharmaceutical-grade polyethersulfone (PES) sterilizing membrane
- Low adsorption, high flow rate, and high capacity
- The filtration device features high stability
- The screw cap, hose connection, and other parts are ergonomically designed, enabling easy and effortless operation
- The scales are accurate and easy to read
- Individually packaged and subjected to gamma irradiation sterilization
- Free from DNAse, RNAse, and pyrogen

Structural Materials

- Upper cup and collection bottle: Polystyrene(PS)
- Vacuum port connector: Acrylonitrile-Butadiene-Styrene copolymer (ABS)
- Bottle cap: Polyethylene(PE)
- Membrane material: Polyethersulfone(PES)
- The above materials all comply with the USP Class VI standard

Typical Applications

- Cell media filtration
- Buffer filtration
- Protein intermediate filtration
- Filtration of other biological samples and reagents

Maximum Operating Pressure

- 0.09 Mpa

Product Specifications

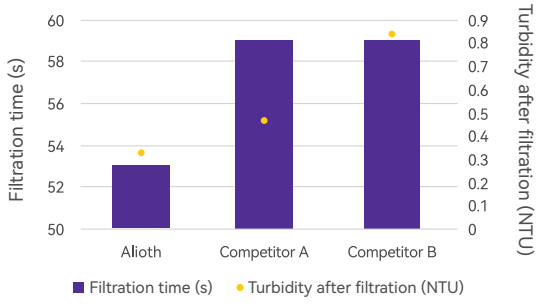
Volume (mL)	Filter membrane diameter (mm)	Working volume (mL)	Residual volume (mL)	Maximum operating temperature (℃)
150	50	150	3	45
250	50	250	3	45
500	75	500	3	45
1000	91	1000	3	45

BrilliFlow® Disposable Vacuum Filtration Device

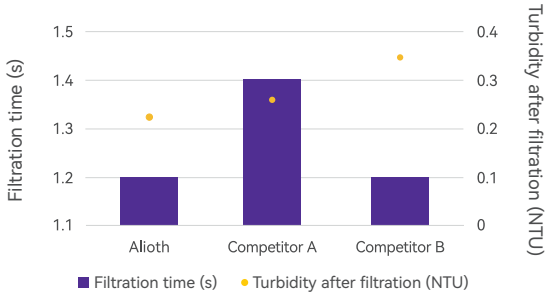
Filtration Per ormance Comparison

Lifeforge BrilliFlow® Disposable Vacuum Filtration Device exhibits superior overall performance in filtering high-, medium-, and low-turbidity ma-terials, with a small residual volume

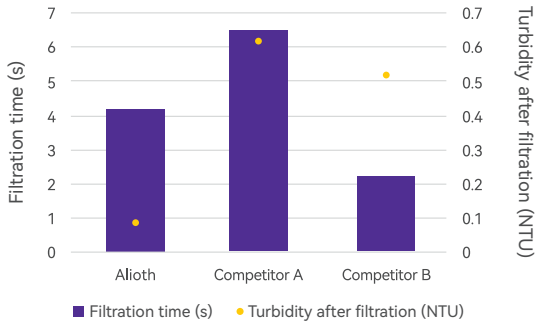
Low-turbidity material liquid: 8.85 NTU



Medium-turbidity material liquid: 14.14 NTU



High-turbidity material liquid: 34.70 NTU



Filtration Performance Comparison

Parameters	Lifeforge（500 mL）	Competitor A（500 mL）	Competitor B（500 mL）
Membrane material	PES	PES	PES
Diameter (mm)	75	65	73
Area (cm^2)	44.2	33.2	40
Measured retention volume (mL)	3.21	1.97	4.7

Ordering Information

Format	Pore size	Type
8=Disposable vacuum filtration device (reservoir+filter accessories+ bottle cap)	2=0.2 μm 4=0.45 μm	150=150 mL 250=250 mL 500=500 mL 000=1000 mL

Ordering Information for Accessories

Format	Type
BT=Receiver	150=150 mL 250=250 mL 500=500 mL 000=1000 mL

Format	Pore size	Type
FC=Upper cup of disposable filter	2=0.2 μm 4=0.45 μm	150=150 mL 250=250 mL 500=500 mL 000=1000 mL

Lifeforge Membrane Filter

Chemical Compatibility

High Retention

Moist Heat Sterilization

Gamma Irradiation

Product Introduction

Lifeforge Membrane Filter is made from hydrophilic polyethersulfone (PES) membrane, and placed in a compatible membrane holder. It can remove particles and microorganisms from liquids, thus very suitable for the development and validation of early-stage filtration process. Be-sides, it can withstand multiple cycles of high-temperature and high-pressure sterilization, meeting the common requirements for liquid filtra-tion in pharmaceutical industry.

Key Features and Benefits

- Excellent chemical compatibility
- Excellent wettability
- High retention capacity
- Low adsorption
- Excellent optical properties
- Appropriate flow rate
- Few extractables
- Resistance to multiple steam sterilization
- Resistance to gamma irradiation sterilization
- Original membrane integrity tested
- Stable performance and sturdy durability
- Available materials: PES/PTFE/MCE/PP/GF/PSF
- Available diameters: 47 mm, 90 mm, 142 mm, 200 mm
- Easy and flexible to operate, user-friendly

Lifeforge Membrane Filter

Product Specifications

Membrane	Polyethersulfone (PES)			
Diameter	47 mm	90 mm	142 mm	200 mm
Effective Filtration Area	13 cm^2	50 cm^2	141 cm^2	255 cm^2
Thickness	Approximately 110 μm			
Pore Size	0.2 μm/0.45 μm/0.45+0.2 μm/0.65+0.2 μm/0.8+0.2 μm/1.2+0.2 μm			
Maximum Operating Temperature	Can withstand moist heat sterilization			
Integrity	As an example, for PES A series with a single layer of 0.2 μm, bubble point is 4.8±0.5 bar As an example, for PES C series with a single layer of 0.2 μm, bubble point is 4.3±0.5 bar			
Water Permeability	As an example, for PES A series with a single layer of 0.2 μm, water flux is ≥45 mL/bar/min/cm^2 As an example, for PES C series with a single layer of 0.2 μm, water flux is ≥35 m L/bar/min/cm^2			
Bacterial Retention	>10^7 cfu/cm^2 B.*diminuta* (ATCC® 19146™)			
Biological Safety	All construction components meet the biological safety requirements refering to USP <88> Class VI plastic and USP <87>			
Quality System	Manufactured in a facility whose Quality Management System has been certified with ISO 9001			
Manufacturing Environment	Manufactured in conformance with cGMP			
Shelf Life	3 years at 10-35℃ and below 70% humidity			

Ordering Information

Product format	Membrane	Pore size	Size	Package
MF=Membrane filter	EC=PES material C series ED=PES material D series	02=0.2 μm 04=0.45 μm 52=0.45+0.2 μm 62=0.65+0.2 μm 82=0.8+0.2 μm 12=1.2+0.2 μm	047=47 mm 090=90 mm 142=142 mm 200=200 mm	25=25/PK

02

DEPTH FILTRATION

DEPTH FILTRATION

www.lifeforgeventures.com

Nexdep® Depth Filter

Single-use Design
Flexible Media Selection
Robust & Reliable
Easy Operation

Product Introduction

The **Lifeforge Nexdep®** depth filter is primarily used for the clarification step in pharmaceutical processes, offering greater flexibility for large-scale production with its disposable design.

The **Nexdep®** Depth Filter features various media combinations, mainly composed of cellulose, filter aids, and positively charged resins. It pro-vides strong dirt-holding capacity and is suitable for clarifying cell culture fluid. It can progressively retain intact cells and cell fragments, reduce turbidity, and effectively absorb impurities such as DNA, HCP, and endotoxins, thereby reducing the pressure on subsequent purifica-tion steps.

Different product specifications are available to meet the needs of laboratory, pilot-scale, and production-scale applications.

Key Features and Benefits

- Disposable design eliminates the need for cleaning validation
- Modular design adapts to current mainstream clarification holders and systems
- Small hold-up volume facilitates easy product recovery, im-proving yield
- Flexible media selection optimize customer product develop-ment
- Easy operation, small footprint, and space-saving design

Typical Applications

- Clarification of CHO cell culture fluid
- Clarification in vaccine production process
- Clarification of yeast fermentation broth (after centrifugation)
- Clarification in plasmid production process (E. coli lysate)
- Clarification of lentivirus and adeno-associated virus culture fluid

Nexdep® Depth Filter

Product Specifications

Product Specifications	Product Series	Nexdep® process development scale (L series)	Nexdep® laboratory scale (P series)	Nexdep® production scale (M series)
	Effective Filtration Area	23 cm^2	270 cm^2, 540 cm^2	0.11 m^2, 0.55 m^2, 1.1 m^2
	Overall Dimension	9.4 × 7.1 × 4.3 cm	22 × 14 × (7.4 ~ 9.6) cm	62× 32 × (3.1 ~ 12.4) cm
Materials of Construction	Inlet, Outlet and Exhaust Port	Luer connector: Polypropylene	6 mm hose connector: Glass fiber-filled polypropylene	Flat end connector: Glass fiber-filled polypropylene
	Frame and Cover Material	Glass fiber-filled polypropylene		
	Filter Plate	Cellulose, filter aids and resin		
	Supporting Layer	Polypropylene		
	O-ring	Silicone		
Working Characteristics	Aerosol Challenge Test	Aerosol leakage < 0.01%		
	Maximum Operating Pressure	3.5 bar @ 40℃		
	Maximum Forward Differential Pressure	3.0 bar @ 25℃		
	Maximum Reverse Differential Pressure	2.0 bar @ 25℃		
	Sterilization Resistance	Autoclave: 125℃ 60 min，2cycles		
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in FDA 21 CFR 177-182		
	Toxicity	The raw materials of all **Nexdep®** Depth Filter components, including filter plates (mainly made from cellulose, filter aids and resin), frames and covers made from glass fiber-filled polypropylene, depth supporting nets made from polypropylene, and silicone O-rings, meet the biological safety requirements refering to USP <88> Class VI plastic		
	Bacterial Endotoxin	The endotoxin level of rinsing liquid is < 0.25 EU/mL, which complies with the requirements for water for injection in Chinese Pharmacopoeia and United States Pharmacopoeia		

Pore Size Range

Name of medium	Application	Features	Composition
Double-layer HD Series	Primary clarification of cell culture fluid	Two-stage filter plate and open pore size design, which can retain large particles and fragments	Cellulose, filter aids and resin
Double-layer HA Series	Secondary clarification of cell culture fluid	Double-stage filter plate with a dense structure for stricter turbidity control	Cellulose, filter aids and resin
Double-layer HC Series	Direct clarification of cell culture fluid	Double-stage filter plate, which is designed to clarify material liquid with a low cell density	Cellulose, filter aids and resin
Double-layer CE Series	Clarification of plasmids and virus particles, etca.	Double-stage filter plate, which features low ad-sorption	Cellulose

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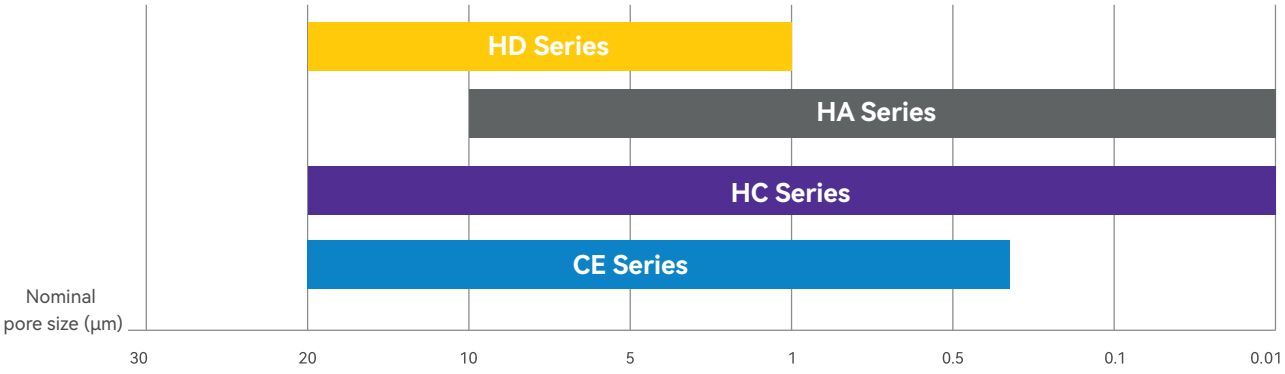
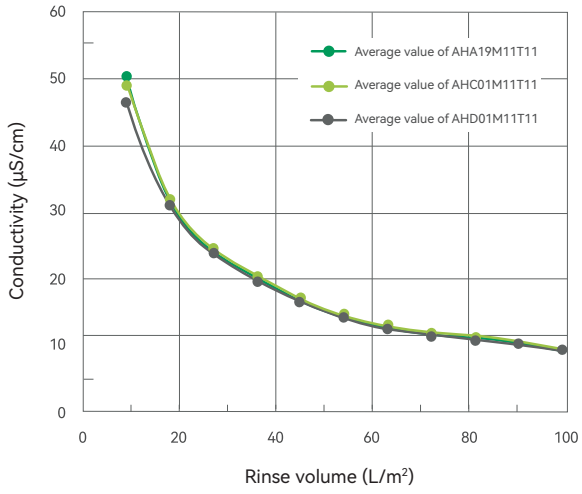
Nexdep® Depth Filter

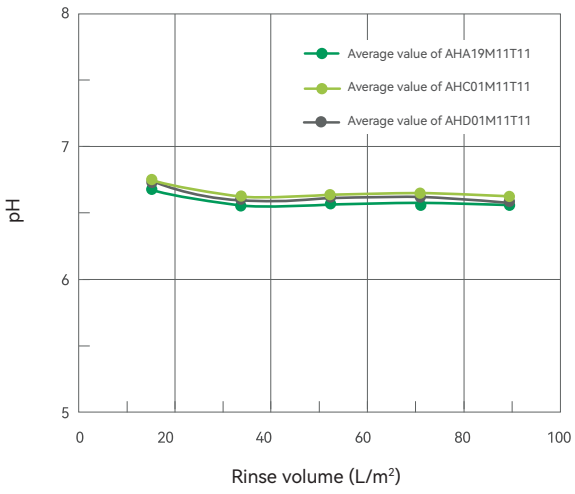
Pore Size Range



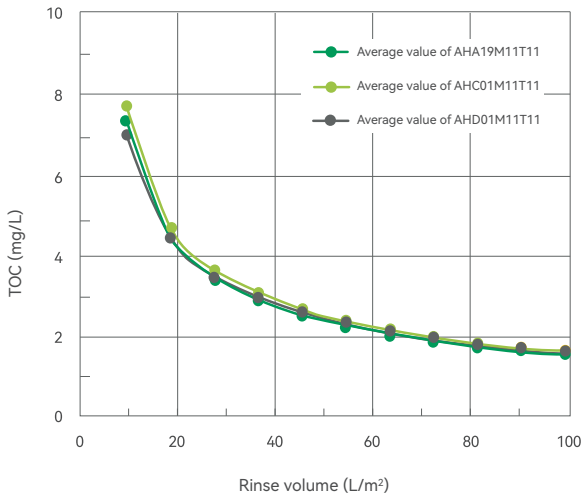
Conductivity Test Results



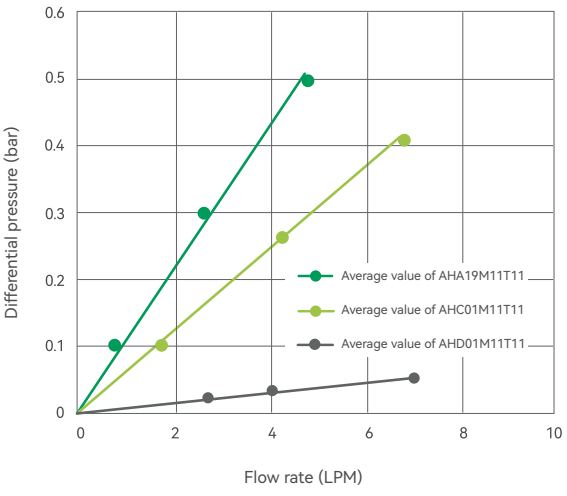
pH Test Results



TOC Test Results



Test Results of Flow Differential Pressure



Nexdep® Depth Filter

Validation Methods and Results

Conductivity	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes. These filters were then rinsed with 100 L/m² pure water for 10-20 minutes. The conductivity ranged from 2.79 to 7.51 μS/cm
NVR	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes. These filters were then rinsed with 100 L/m² pure water for 10-20 minutes. The NVR ranged from 667 to 1,314 mg
TOC	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes. These filters were then washed with 100 L/m² pure water for 10-20 minutes. The TOC ranged from 1.12 to 1.55 mg/L
pH	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes. These filters were then rinsed with 100 L/m² pure water for 10-20 minutes. The pH ranged from 6.10 to 6.62
Endotoxin	Several filters were randomly selected from different production batches, then rinsed with 100L/m² pure water for 10-20minutes, followed by soaking in pure water for 24 hours. The endotoxin level was <0.25 EU/mL as indicated by Tachypleus Amebocyte Lysate test
Flow Differential Pressure	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes. These filters were then rinsed with 100 L/m² pure water for 10-20 minutes. The experiment was conducted at room temperature. After venting, the flow rate was gradually increased, and the upstream and downstream pressures were observed. Within 8 LPM, the differential pressure was < 0.6 bar
Tolerated Liquid Pressure	Several filters were randomly selected from different production batches and subjected to high-pressure sterilization at 125°C for 60 minutes, twice. The tightness of filter was tested. High-viscosity solution was filtered to increase the upstream and downstream differential pressure of filter. The filter was subjected to forward and reverse pulse pressures at room temperature, followed by rinsing, drying and tightness challenge test. At room temperature, Nexdep® Depth Filter can withstand 3.0 bar forward pressure and 2.0 bar reverse pressure

Ordering Information

Format
A=Depth filter

Membrane type
HA01 HC01 HD01 CE01
HA02 HC02 HD02 CE02
....

Filter membrane area
L23=23 cm²
P27=0.027 m²
P54=0.054 m²
M01=0.11 m²
M05=0.55 m²
M11=1.1 m²

Connector type
L0=Luer connector (L23)
B0=6 mm hose connector (P27, P54)
T1=Flat end connector (M01, M05, M11)

Package
1=1/PK
3=3/PK (L23)

Nexdep® Depth Stacked Filter

Product Introduction

Lifeforge Nexdep® Depth Stacked Filters are primarily used for the clarification step in pharmaceutical processes, with stainless steel filter housing to achieve filtration. There are a variety of sizes to meet the customer's use.

Depth stacked filters have a variety of filter media combinations. Filter media are mainly composed of cellulose, filter aid and positive-charged resins or pure cellulose, and thus have high throughput. Filters can be used in cell culture clarification and provide gradual retentions of cells to reduce turbidity and effectively absorb impurities such as DNA, HCP, endotoxin etc., reducing the challenges to subsequent purification steps.

Key Features and Benefits

- Multiple size specifications and customized according to customer needs.
- Flexible media selection to optimize customer product development.
- Adapted to current mainstream filter housing and systems.
- Strict production control and release testing, reliable performance, and low process risk.

Typical Applications

- Clarification of CHO cell culture fluid
- Clarification in vaccine production process
- Clarification of yeast fermentation broth
- Clarification of other material liquids

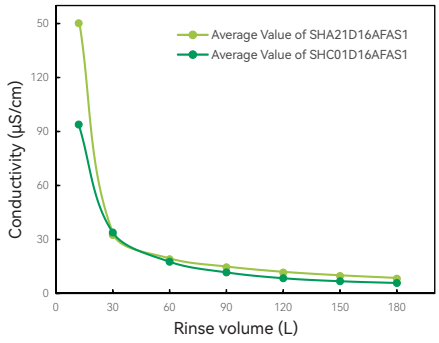
Nexdep® Depth Stacked Filter

Product Specifications

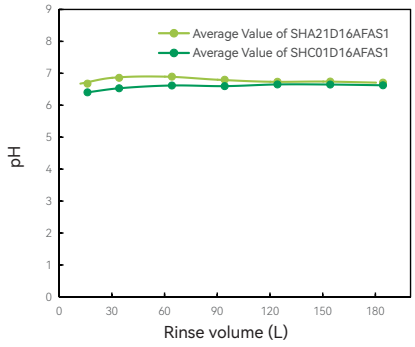
Product Specifications	Product Series	16 inch 8 cells	16 inch 10 cells	16 inch other
	Effective Filtration Area	1.8 m^2	2.3 m^2	Optional
	Height	184 mm	275 mm	
Materials of Construction	Filter Media	Filter Media Cellulose, Filter Aid, Resin or Cellulose		
	Frame and Supporter	Glass Fiber Reinforced Polypropylene		
	Stainless Steel Band	316L		
	O-ring	Silicone		
Working Characteristics	Particle Challenge	Particle Intercept>90%		
	Max Operation Pressure	3.0 bar @ 25℃		
	Max Pressure Differential	Forward: 2.0 bar @ 25℃ Reverse: not recommended		
	Sterilization Resistance	In-line steam: 126℃ 30 min, 3 cycles		
	Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in FDA 21 CFR 177-182		
	Toxicity	The raw materials of all **Nexdep®** Depth Stacked Filter components meet the biological safety requirements refering to USP<88> Class VI plastic		
	Bacterial Endotoxin	The endotoxin level of rinsing liquid is <0.25 EU/mL, which complies with the requirements for water for injection in Chinese Pharmacopoeia and United States Pharmacopoeia		

Validation Methods and Results

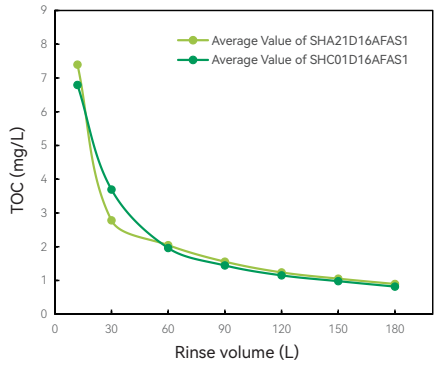
Conductivity Test Results



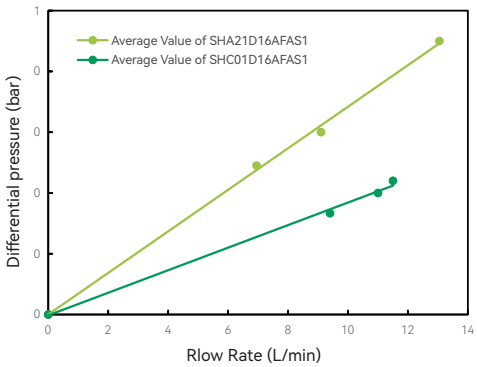
pH Test Results



TOC Test Results



Test Results of Flow and Differential Pressure



Nexdep® Depth Stacked Filter

Validation Summary

Conductivity	Several filters were randomly selected from different production batches, then rinsed with 100L/m² pure water for 10-20 minutes. The conductivity ranged from 5-8 μS/cm.
TOC	Several filters were randomly selected from different production batches, then rinsed with 100L/m² pure water for 10-20 minutes. The TOC was about 1mg/L.
pH	Several filters were randomly selected from different production batches, then rinsed with 100L/m² pure water for 10-20minutes. The pH ranged from 6.6-6.8.
Endotoxin	Several filters were randomly selected from different production batches, then rinsed with 100L/m² pure water for 10-20minutes, followed by soaking in pure water for 24 hours. The endotoxin level was < 0.25 EU/mL as indicated by Tachypleus Amebocyte Lysate test.
Endurance to Sterilization	Several filters were randomly selected from different production batches, after 3 cycles of SIP at 126℃ for 30min, filters passed air tightness, diffusion flow, hydraulic stress. Flow rate and pressure dropafter SIP met the product quality standard.
Hydraulic Stress	Several filters were randomly selected from different production batches, respectively conduct hydraulic stress test at ambient temperature and after 3 cycles of SIP at 123℃ for 30min. High-viscosity solutions was filtered to increase the pressure drop across the filters.Apply forward pulse pressure to the filter at ambient temperature, rinseand conduct diffusion flow. Depth stacked filter can withstand 2.0bar forward pressure at ambient tempera-ture.

Ordering Information

Format	Membrane type	Membrane component	Dimension	Cell	Adapter
S=Depth Stacked Filter	HA01, HA02.. HC01, HC02... CE01, CE02..	D=Double layer S=Single layer	16=16 inch	A=8 cells C=10 cells F=16 cells	F=Flat Seal

Structure	O-ring	Package
A=SS Band	S=Silicone	1=1EA/pkg

Lifeforge Disposable Connector Kit

Disposable Design
Strong Compatibility
Stable Performance

Product Introduction

Lifeforge disposable straight-through connector and Blind-plug connector sets, which are made from polypropylene, can enable the correct in-stallation of depth filter and meet the requirements of depth filtration process when used with **Nexdep** depth filter and holders.

Key Features and Benefits

- Good chemical compatibility, with a tolerance range of pH 1-14
- Good pressure resistance and sealing performance
- Single use recommended
- Stable performance, sturdy structure and durable service
- Available in straight-through and blind-plug connectors

Ordering Information

Order No.	Product Description	Package Available for Ordering
KITORING	3 straight-through connectors, 3 blind-plug connectors	1=1/PK
KITORING 6	6 straight-through connectors	1=1/PK

Nexdep® Disc Depth Filter

Product Introduction

Nexdep® disc depth filters have a variety of filter media combinations. Filter media are mainly composed of cellulose, filter aid and posi-tive-charged resins or pure cellulose, and thus have high throughput. Filters are mainly used for pre-filtration and clarification in virus filtration, improve the robustness of virus filtration operations by efficiently removing impurities, such as protein aggregates.

Key Features and Benefits

- Flexible media selection to optimize customer product development.
- Adapted to current mainstream virus filters.
- Strict production control and release testing, reliable performance, and low process risk.

Product Specifications

Effective Filtration Area	5 cm^2
Filter Media	Cellulose, filter aid, resin or cellulose
Frame and Supporter	Glass fiber reinforced polypropylene
Inlet and Outlet	Luer connector
Pressure Leak Test	<50 mbar @ 3.0 bar
Max Operation Pressure	3.0 bar @ 25℃
Max Pressure Differential	Forward: 3.0 bar @ 25℃ Reverse: not recommended
Sterilization Resistance	Autoclave: 125℃ 60min, 2 cycles
Indirect Food Additive	All component materials meet the requirements of Indirect Food Additive cited in FDA 21 CFR 177-182
Toxicity	All construction components meet the biological safety requirements refering to USP <88> Class VI plastic
Bacterial Endotoxin	The endotoxin level of rinsing liquid is <0.25 EU/mL, which complies with the requirements for water for injection in Chinese Pharmacopoeia and United States Pharmacopoeia

Nexdep® Disc Depth Filter

Validation Methods and Results

Test Results of Flow and Differential Pressure

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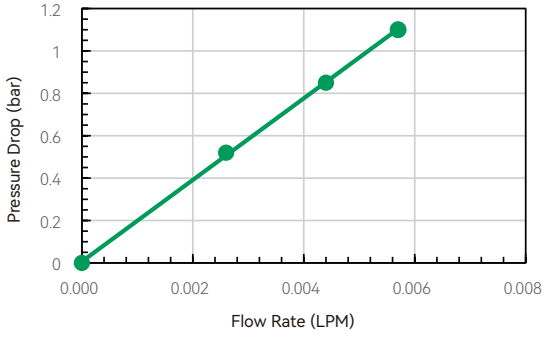

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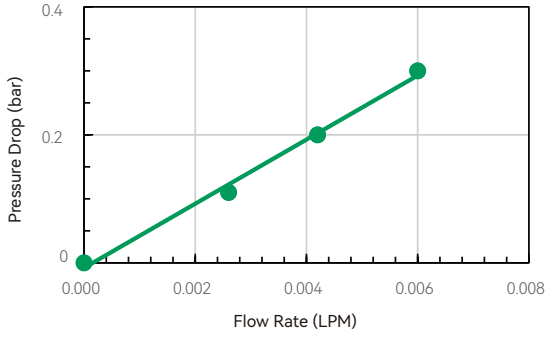


Validation Summary

Endotoxin	Several filters were randomly selected from different production batches, then rinsed with 100 L/m² pure water for 10-20minutes, followed by soaking in pure water for 24 hours. The endotoxin level was < 0.25 EU/mL as indicated by Tachypleus Amebocyte Lysate test.
Endurance to Sterilization	Several filters were randomly selected, after 2 cycles of autoclave at 125℃ for 60min, filters passed pressure leak test. Flow rate and pressure drop after autoclave met the product quality standard.

Ordering Information

Product format	Media type	Dimension	Adapter	Package quantity
C=Depth Capsule Filters	HA01,HA02.. HC01,HC02.. HD01,HD02.. CE01,CE02..	C05=5 cm²	L0=Luer	9=9 EA/pkg

03

HARDWARE

HARDWARE

Lifeforge Stainless Steel Filter Housing

Sanitary Level
Easy to Clean
Easy to Drain
High Compatibility

Product Introduction

Lifeforge stainless steel filter housing is designed according to sanitary requirements and GMP requirements. Combined with various materials of diaphragms and various sizes of cartridge filters produced by **Lifeforge**, it can be flexibly used at different stages of different processes in different industries. It is extremely easy to clean and drain, poses no concerns about residual liquid, and can meet the strict requirements of key material liquid and key parts for filter housing in biopharmaceutical industry. It can also be widely used in industries such as pharmaceuticals, bioengi-neering, food and beverages. At the same time, this filter housing is compatible with different brands of cartridge filters in the market, greatly facilitating customers to make flexible choices.

Key Features and Benefits

- Sanitary design, which meets the strict regulatory require-ments of pharmaceutical industry
- Compliant with cGMP standards
- Effort-saving, safe and easy operation
- Compatible with major brands of cartridge filters in the market
- Equipped with a low-point drain valve for easy removal of re-sidual material liquid and CIP liquid
- Equipped with a high-point vent valve to prevent filtration blockage caused by compressed gas and ensure SIP perfor-mance
- Available in a full range of specifications for laboratory re-search scale, clinical pilot production scale, and commercial large-scale production
- Adopt industry-standard chuck interface connection
- Can be specially customized according to the requirements of customer

Product Documentation Package

- Basic drawings of the product
- Maintenance guide and operation manual
- Calibration certificates of instruments
- Material certification documents
- Certification document of surface finish
- List of spare parts
- Custom files related to other customized products

Product Applications

- Culture media filtration
- Collection of fermentation broth
- Water for injection
- Gas filtration

Lifeforge Stainless Steel Filter Housing

Product Specifications

Material	Filter housing: 316L stainless steel Gasket: Silicone rubber Hoop: 304 stainless steel
Filter Connector Type	Code 7/2-226
Sterilization	Available for steam sterilization in place or high-pressure moist heat sterilization
Finish	Internal polishing≤0.6 μm; external polishing≤0.8 μm
Size of Loadable Filter	5 inch/10 inch/20 inch/30 inch
Size/Weight	Please refer to the drawings of products with different article numbers for details
Number of Loadable Filters	1 cartridge, 3 cartridges, 5 cartridges ※ (7 cartridges, 9 cartridges, 11 cartridges please contact sales personnel for customization)
Maximum Operating Conditions	25℃ @ 10 bar;145℃ @ 3.2 bar

Information on Spare Parts

					
HSSPCTT1	HSSPOST1	HSSPGTT1	HSSPMTT1	HSSPDTB0	HSSPATTDC06
1.5-inch stainless steel hoop	1.5-inch silicone gasket	1.5-inch diaphragm pressure gauge	1.5-inch stainless steel stuffy cover	Stainless steel vent valve assembly	50 mm TC to 14 mm hose connector

Ordering Information

Format
HS=Stainless Steel Filter Housing
HSP=Stainless Steel Filter Housing P Type

Number of filters
1=1 cartridge
3=3 cartridges
5=5 cartridges

Filter housing type
T=T line
N=In line
C=C line

Size
05=5 inch
10=10 inch
20=20 inch
30=30 inch

Filter connector
7=226 Spearhead with fins
8=222 Spearhead with fins

Filter housing connector
A=1" TC
B=1.5" TC
C=2" TC

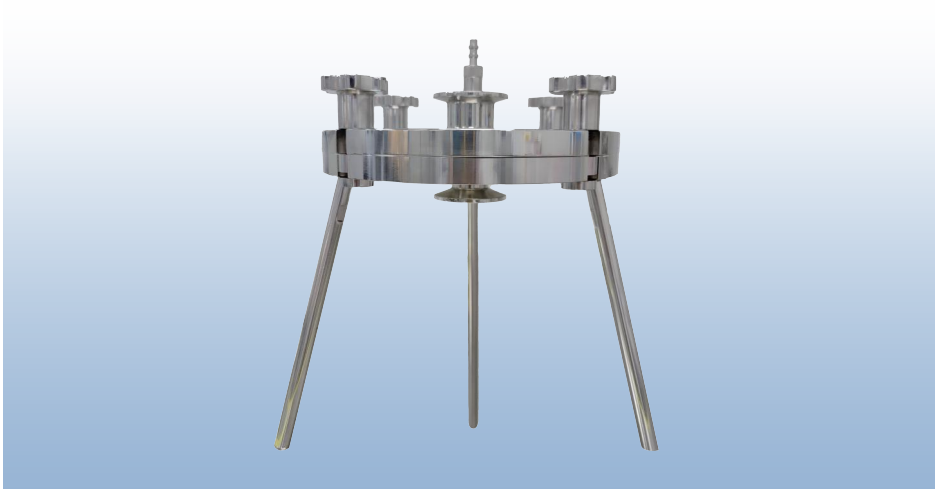
Exhaust port
V=Vent valve
N=None

Drain port
V=Drain valve
N=None

Package
1=1/PK

Lifeforge Membrane Holder

High Compatibility
Easy Discharge
Standard Connector
Customizable



Product Introduction

Lifeforge membrane holder is designed according to sanitary requirements and GMP standards. Combined with various materials and sizes of di-aphragms produced by **Lifeforge**, it can be flexibly used at the diaphragm material selection stage of different processes in different industries. It is easy to clean and drain, poses no concerns about residual liquid, and can meet the relevant requirements of biopharmaceutical industry.

It can also be widely used in industries such as pharmaceuticals, bioengineering, food and beverages. At the same time, this membrane holder can also be compatible with diaphragms of the same diameter from different brands in the market, greatly facilitating customers to make flex-ible choices.

Key Features and Benefits

- Sanitary design, which meets the strict regulatory require-ments of pharmaceutical industry
- Compliant with cGMP standards; effort-saving, safe and easy operation
- Compatible with major brands of diaphragms in the market
- Equipped with a low-point vent valve for easy removal of re-sidual material liquid
- Compatible with diaphragms from different brands
- Adopt industry-standard chuck interface connection
- Can be specially customized according to the requirements of customer

Product Applications

- Liquid filtration
- Diaphragm material selection
- Process development

Lifeforge Membrane Holder

Product Specifications

Material	Stainless steel: SS 316L, SS 304L Gasket: Silicone
Connector Type	Available in: Flange connectors 25 mm and 50 mm
Finish	Available in: Mirror polishing, internal electrolytic polishing and external mechanical polishing
Diameter	Available in: 47, 90, 142, 200, 293 mm
Maximum Operating Conditions	0.6 MPa

Ordering Information

Format
MH=Stainless Steel Membrane Holder

Diameter
047=47 mm
090=90 mm
142=142 mm
200=200 mm
293=293 mm

Material
4=SS 304
6=SS 316L

Inlet and outlet connectors
T2=TC 25 mm (47/90 mm)
T5=TC 50 mm (142/200/293 mm)

Sealing ring
S=Silicone

Surface treatment
M=Mirror polishing
E=Internal electrolytic polishing and external mechanical polishing

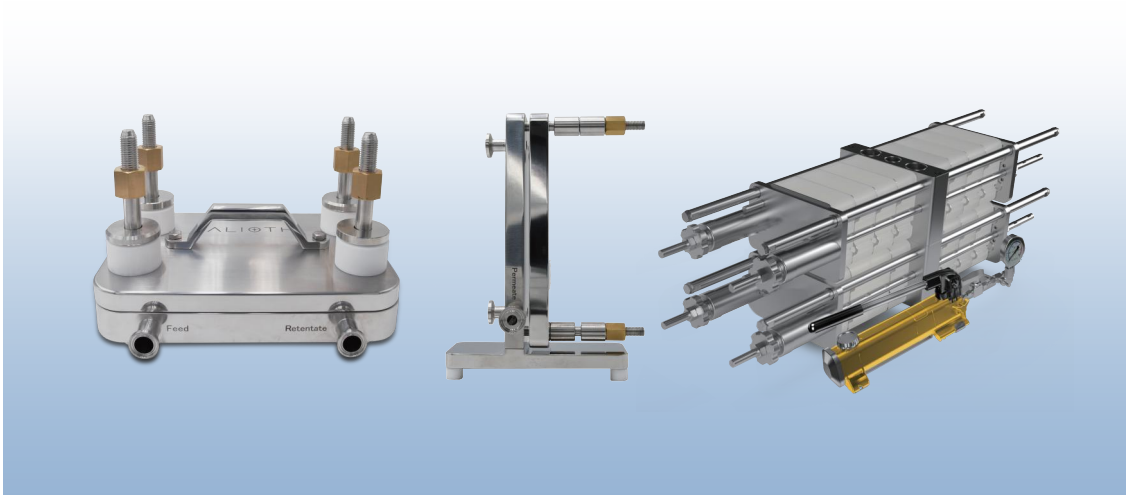
Package
1=1/PK

Lifeforge Ultrafiltration Cassette Holder

316L Stainless Steel

Easy Operation

Pharmaceutical-grade Standard



Product Introduction

Lifeforge ultrafiltration cassette holder is commonly used in ultrafiltration process. It is used to hold ultrafiltration cassette of a specific area. With the help of a specific power source, it allows material liquid to pass through the ultrafiltration membrane, thus achieving the purpose of retain-ing target substances.

Made from 316L stainless steel, it can adapt well to different types of material liquids and meet the special requirements of pharmaceutical in-dustry. It is also compatible with plate-type ultrafiltration cassettes commonly seen in the market. It can provide a full range of specifications from research and development to production level. It can also be used in conjunction with and integrated into ultrafiltration systems from dif-ferent brands.

Key Features and Benefits

- Made from 316L stainless steel
- Material liquid-contact surface Ra < 0.6 μm
- Diaphragm valves and pressure gauges, which meet cGMP's requirements for designing sanitary dead angle in the struc-ture conforming to pharmaceutical-grade standards
- Elliptical inlet flow channel design, which can reduce the system pressure loss during operation
- Compatible with major brands of ultrafiltration cassettes in the market
- Available in a full range of specifications for laboratory re-search scale, clinical pilot production scale, and commercial large-scale production
- Resistant to acids, alkali, organic solvents, etc., and meeting SIP/CIP as well as cleaning validation requirements
- Adopt industry-standard chuck interface connection
- Can be specially customized according to the requirements of customer

Product Documentation Package

- CoQ
- Basic drawings of the product
- Maintenance guide and operation manual
- Calibration certificates of instruments
- Material certification documents
- Certification document of surface finish
- IQ/OQ validation services and documents
- List of spare parts
- Custom files related to other customized products

Product Applications

- Purification steps in the production processes of monoclonal antibodies, recombinant proteins, vaccines, blood products, liposomes, small molecules, and other pharmaceuticals
- Suitable for various processes such as concentration, dialysis, buffer solution replacement, desalination, purification, pyrogen removal, clarification, etc.

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Lifeforge Ultrafiltration Cassette Holder

Ordering Information

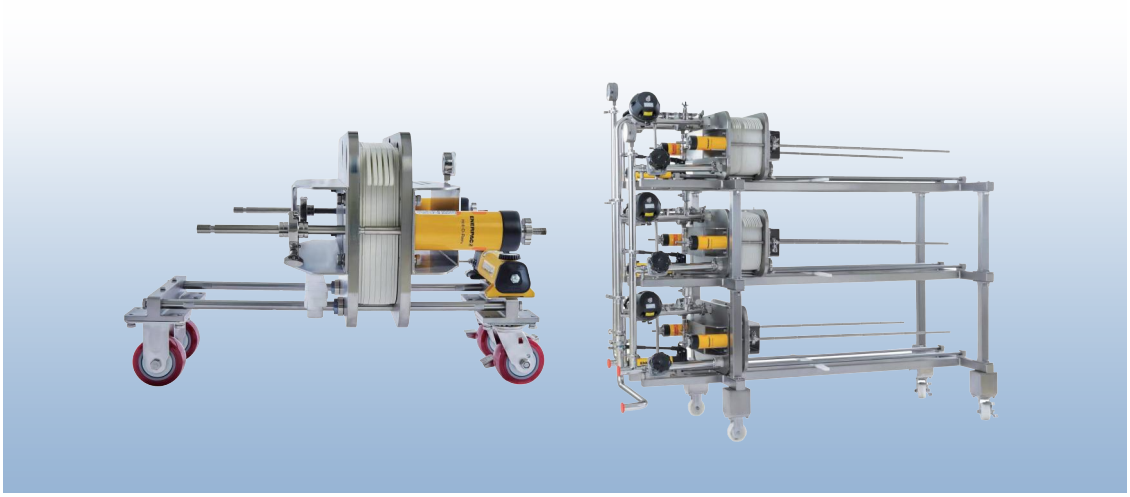
Order No.	Product description	Package
TFHBG0A1-1	Ultrafiltration Cassette Holder 0.1 m^2	1/PK
TFHBG0A1-2	Ultrafiltration Cassette Holder 0.1 m^2 Set (including holder, wrench, pressure gauge, diaphragm valve, tee-junction, hoop, sealing ring, etc.)	1/PK
TFHBG0A5-1	Ultrafiltration Cassette Holder 0.5 m^2	1/PK
TFHBG0A5-2	Ultrafiltration Cassette Holder 0.5 m^2 Set (including holder, wrench, pressure gauge, diaphragm valve, tee-junction, hoop, sealing ring, etc.)	1/PK
TFHBG2A5-1	Ultrafiltration Cassette Holder 2.5 m^2	1/PK
TFHBG2A5-2	Ultrafiltration Cassette Holder 2.5 m^2 set (including holder, wrench, pressure gauge, diaphragm valve, tee-junction, hoop, sealing ring, etc.)	1/PK
TFHBG2A5-ET51	Ultrafiltration Cassette Holder 2.5 m^2, with extension design could support 5m^2	1/PK
TFHBG2A5-ET51	Ultrafiltration Cassette Holder 2.5 m^2, with extension design could support 5m^2, set (including holder, wrench, pressure gauge, diaphragm valve, tee-junction, hoop, sealing ring, etc.)	1/PK
TFHBG5A0-1	Ultrafiltration Cassette Holder 5 m^2	1/PK
TFHBG5A0-2	Ultrafiltration Cassette Holder 5 m^2 Set (including holder, wrench, pressure gauge, diaphragm valve, tee-junction, hoop, sealing ring, etc.)	1/PK
TFHBG10A-1	Ultrafiltration Cassette Holder 10 m^2	1/PK
TFHBG20A-1	Ultrafiltration Cassette Holder 20 m^2	1/PK

Lifeforge Stainless Steel Depth Filter Holder M Type

Easy to Use

Linear Amplification

In Compliance with Pharmaceutical Industry Requirements



Product Introduction

Lifeforge stainless steel depth filter holder M type is commonly used to hold depth filter holder of a specific area. With the help of a specific power source, it allows material liquid to pass through the depth filter, thus achieving the purpose of separating impurities from liquid. When used in combination with **Lifeforge**-produced depth filter, it can support the needs for different scales of production and use. Made from 316L stainless steel, it meets the requirements of pharmaceutical industry. The equipment is simple, structurally robust, and easy to install and use. It is also compatible with common plate-type depth filter holders from other brands.

Key Features and Benefits

- Made from 316L stainless steel
- Surface finish Ra<1.2 μm, liquid contact surface finish Ra<0.6 μm
- Diaphragm valves and pressure gauges, which meet cGMP's requirements for designing sanitary dead angle in the structure conforming to pharmaceutical-grade standards
- Equipped with stainless steel pipeline, and also compatible with disposable pipeline
- Equipped with hydraulic device and depth filter holder; effort-saving, safe and easy operation
- Compatible with major brands of depth filter holders in the market
- Available in a full range of specifications for laboratory research scale, clinical pilot production scale, and commercial large-scale production
- Resistant to acids, alkalis, organic solvents, etc., and meeting SIP / CIP as well as cleaning validation requirements
- Adopt industry-standard chuck interface connection
- Can be specially customized according to the requirements of customer

Product Configuration

- **Lifeforge** depth cartridge filter is connected to process pipelines through disposable connectors, forming disposable flow passage
- Disposable separation plate allows installation of more than one filter models on a single-layer holder

Product Documentation Package

- CoQ
- Basic drawings of the product
- Maintenance guide and operation manual
- Calibration certificates of instruments
- Material certification documents
- Certification document of surface finish
- FDA certificate for hydraulic oil
- Seal component 2.2 certificate
- EN 10204 certificate for flow passage component
- IQ/OQ validation service and documents
- List of spare parts
- Custom files related to other customized products

Product Applications

- Clarification step in monoclonal antibody production process
- Clarification step in recombinant protein production process
- Clarification step in vaccine production process
- Clarification step in blood product production process

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Lifeforge Stainless Steel Depth Filter Holder M Type

Product Specifications

Type	2.2 m^2	5.5 m^2	11 m^2	22 m^2	33 m^2
Dimension (length × width × height)	81x64x51 cm 103x64x51 cm (including pipeline valves)	133x73x100 cm 162x73x100 cm (including pipeline valves)	196x73x100 cm 223x73x100 cm (including pipeline valves)	199x89x117 cm 203x89x117 cm (including pipeline valves)	195x89x157 cm 203x89x177 cm (including pipeline valves)
Weight	110-120 kg	160-170 kg	180-190 kg	340-360 kg	480-500 kg
Holder Baffle	SS 304				
Liquid-contacting Part	SS 316L				
Surface Finish	Surface finish Ra<1.2 μm, liquid-contacting surface finish Ra<0.6 μm				
Equipment Frame	SS 304				

Ordering Information

Order No.	Product description	Package
DFHBGM2A2-1	Depth Filter Holder M Type 2.2 m^2, with liquid-contacting tray at the bottom	1/PK
DFHBGM2A2-2	Depth Filter Holder M Type 2.2 m^2, with liquid-contacting tray at the bottom, and valve pressure gauge	1/PK
DFHBGM2A2-ET31	Depth Filter Holder M Type 2.2 m^2, with extension rod for holding 5.5 m^2, and liquid-contacting tray at the bottom	1/PK
DFHBGM2A2-ET32	Depth Filter Holder M Type 2.2 m^2, with extension rod for holding 5.5 m^2, liquid-contacting tray at the bottom, and valve pressure gauge	1/PK
DFHBGM5A5-1	Depth Filter Holder M Type 5.5 m^2, with liquid collection tray at the bottom	1/PK
DFHBGM5A5-2	Depth Filter Holder M Type 5.5 m^2, with liquid-contacting tray at the bottom, and valve pressure gauge	1/PK
DFHBGM11A-1	Depth Filter Holder M Type 11 m^2, with liquid-contacting tray at the bottom	1/PK
DFHBGM11A-2	Depth Filter Holder M Type 11 m^2, with liquid-contacting tray at the bottom, and valve pressure gauge	1/PK
DFHBGM22A-1	Depth Filter Holder M Type 22 m^2, with liquid-contacting tray at the bottom, and U-shaped	1/PK
DFHBGM22A-2	Depth Filter Holder M Type 22 m^2, with liquid-contacting tray at the bottom, U-shaped connector, and valve pressure gauge	1/PK
DFHBGM22A-3	Depth Filter Holder M Type 22 m^2, with liquid collection trays at the bottom and top, and U-shaped connector	1/PK
DFHBGM22A-4	Depth Filter Holder M Type 22 m^2, with liquid-contacting trays at the bottom and top, U-shaped connector, and valve pressure gauge	1/PK
DFHBGM33A-1	Depth Filter Holder M Type 33 m^2, with liquid-contacting tray at the bottom, and T-shaped connector	1/PK
DFHBGM33A-2	Depth Filter Holder M Type 33 m^2, with liquid-contacting tray at the bottom, T-shaped connector, and valve pressure gauge	1/PK
DFHBGM33A-3	Depth Filter Holder M Type 33 m^2, with liquid-contacting trays at the bottom and middle part, and T-shaped connector	1/PK
DFHBGM33A-4	Depth Filter Holder M Type 33 m^2, with liquid-contacting trays at the bottom and middle part, T-shaped connector, and valve pressure gauge	1/PK
DFHBGM33A-5	Depth Filter Holder M Type 33 m^2, with liquid-contacting trays at the bottom, middle part and top, and T-shaped connector	1/PK
DFHBGM33A-6	Depth Filter Holder M Type 33 m^2, with liquid-contacting trays at the bottom, middle part and top, T-shaped connector, and valve pressure gauge	1/PK

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Lifeforge Stainless Steel Depth Filter Holder P Type

316L Stainless Steel

Flexible and Compact

Customizable Strong Compatibility

Product Introduction

Lifeforge stainless steel depth filter holder P type is commonly used in deep depth filtration process. It is used to clamp depth filter holder of a specific area. With the help of a specific power source, it allows liquid to pass through the deep depth filter, thus achieving the purpose of sep-arating impurities such as solid particles from liquid.

Made from 316L stainless steel, it is compatible with different types of liquids and meets the special requirements of pharmaceutical industry. The equipment is simple, structurally robust, and easy to install and use. Its vertical design contributes to a small footprint. It is also compatible with round cake-type depth filter holder commonly seen in the market. Different holding capacities greatly facilitate pharmaceutical customers to make flexible choices at different stages.

Key Features and Benefits

- Vertical design; with guide plates, allow for filtration operations such as bottom-in and bottom-out, top-in and bottom-out, and bottom-in and top-out
- Made from 316 L stainless steel
- Surface finish Ra<1.2 μm
- Diaphragm valves and pressure gauges, which meet cGMP's requirements for designing sanitary dead angle in the struc-ture conforming to pharmaceutical-grade standards
- Optionally equipped with hydraulic device and filter holder; ef-fort-saving, safe and easy operation
- Compatible with major brands of round cake-type depth filter holders in the market
- Comprehensive range of product specifications, and flexible selection Resistant to acid, alkali, organic solvents, etc., and meeting SIP/CIP as well as cleaning validation requirements
- Adopt industry-standard chuck interface connection
- Can be specially customized according to the requirements of customer

Product Documentation Package

- CoQ
- Basic drawings of the product
- Maintenance guide and operation manual
- Calibration certificates of instruments
- Material certification documents
- FDA certificate for hydraulic oil
- Certification document of surface finish
- IQ/OQ validation service and documents
- List of spare parts
- Custom files related to other customized products

Product Applications

- Clarification step in monoclonal antibody production process
- Clarification step in recombinant protein production process
- Clarification step in vaccine production process
- Clarification step in blood product production process
- Clarification step in cellular/genetic drug production process

Lifeforge Stainless Steel Depth Filter Holder P Type

Product Specifications

Type	Hydraulic filter holder		Manual filter holder	
Dimension (length × width × height)	115x94x223 cm (10 m² filter holder, with a large baseplate)	115x82x156 cm (5 m² filter holder, with a large baseplate)	115x94x223 cm (10 m² filter holder, with a large baseplate)	115x82x156 cm (5 m² filter holder, with a large baseplate)
Weight	170-180 kg		170-180 kg	
Surface Finish	Surface finish Ra<1.2 μm, liquid-contacting surface finish Ra<0.6 μm			
Equipment Frame	SS 304			

Ordering Information

Order No.	Product description	Package
DFHBGP05-1	Depth Filter Holder P Type, with the ability of holding 1-5 filter holders, and without manual hydraulic pump	1/PK
DFHBGP05-2	Depth Filter Holder P Type, for holding 1-5 filter holders, with manual hydraulic pump	1/PK
DFHBGP10-1	Depth Filter Holder P Type, with the ability of holding 1-10 filter holders, and without manual hydraulic pump	1/PK
DFHBGP10-2	Depth Filter Holder P Type, with the ability of holding 1-10 filter holders, and with manual hydraulic pump	1/PK

Lifeforge Virus Filter Holder

Easy Operation

Safe and Convenient

316L Stainless Steel

Product Introduction

Lifeforge Virus Filter Holder is commonly used in virus removal filtration process. It is used to hold virus filter holder of a specific area. With the help of a specific power source, it allows liquid to pass through the virus filter holder, thus achieving the goal of retaining viruses in the liquid.

Key Features and Benefits

- Made from 316L stainless steel
- Surface polishing Ra<1.2 μm
- Diaphragm valves and pressure gauges, which meet cGMP's requirements for designing sanitary dead angle in the structure conforming to pharmaceutical-grade standards
- Equipped with hydraulic device and filter holder; effort-saving, safe and easy operation
- Compatible with major brands of virus filter holders in the market
- Available in a full range of specifications for laboratory research scale, clinical pilot production scale, and commercial large-scale production
- Resistant to acids, alkalis, organic solvents, etc., and meeting SIP/CIP as well as cleaning validation requirements
- Adopt industry-standard chuck interface connection

Product Documentation Package

- CoQ
- Basic drawings of the product
- IQ/OQ validation service and documents
- List of spare parts
- Calibration qualification certificate for device pressure gauge that must undergo calibration before leaving the factory
- Maintenance guide and operation manual
- Material certification documents
- FDA certificate for hydraulic oil
- Surface finish certification

Product Applications

- Virus removal step in monoclonal antibody production process
- Virus removal step in blood product production process

Lifeforge Virus Filter Holder

Product Specifications

Type	Virus Filter Holder (Single Side)	Virus Filter Holder (Double Sides) (with pre-filtration function)
Dimension (length × width × height)	90x60x130 cm	100x60x128 cm
Weight	142 kg	165 kg
Material Composition	SS 304, SS 316L	SS 304, SS 316L

Ordering Information

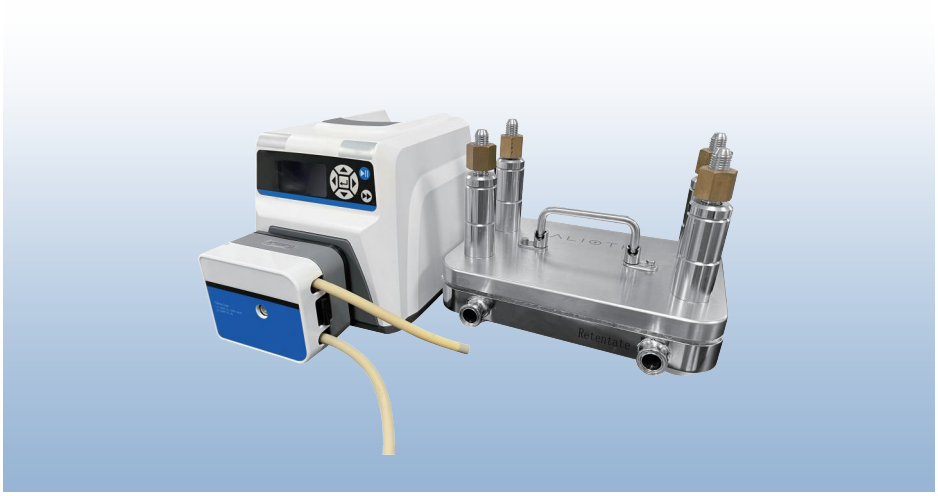
Order No.	Product description	Package
VFHBGM-S	Virus Filter Holder (Single Side)	1/PK
VFHBGM-D	Virus Filter Holder (Double Sides)	1/PK

Lifeforge Manual Ultrafiltration System

Easy Operation

Safe and Convenient

316L Stainless Steel



Product Introduction

Lifeforge manual ultrafiltration system, with its modular design and flexible combination options, supports the use of filters or hollow fibers of dif-ferent areas, thus realizing various filtration requirements ranging from a minimum of 0.1 m^2 to a maximum of 20 m^2, or even a larger area. It is operated manually, providing convenient control. Both desktop- and ground-based versions are available to meet different site needs. The overall system design is compact and space-saving. By displaying pressure and manually adjusting flow rate, the system can control TMP and Delta P effectively. It has flexible design, versatile functions, and diverse applications, thus suitable for various stages and needs in pharmaceu-tical industry, such as laboratory-scale process development, pilot-scale drug production, and GMP-level drug production. Customers can configure different functional modules, such as flow rate, temperature, pH, conductivity, and UV, according to their own process requirements. It has a sanitary design and provides complete IQ / OQ verification service and document support. It can be applied in various pharmaceutical production processes, including but not limited to concentration/diafiltration, microfiltration, and unidirectional tangential flow filtration.

Key Features and Benefits

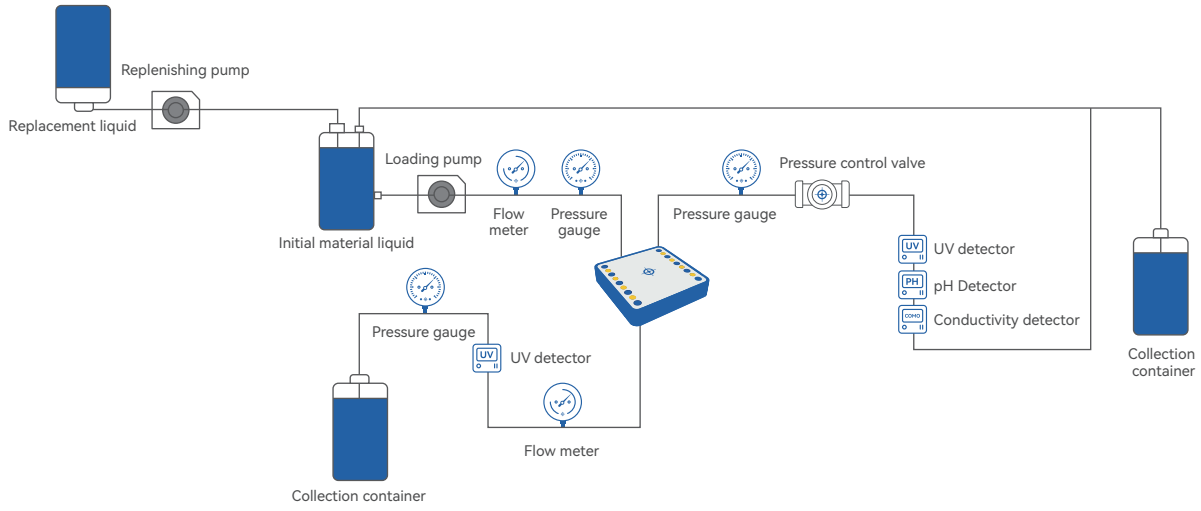
- Compatible with different types of consumables, and flat filters or hollow fibers of different areas
- Compatible with mainstream brands of filters and hollow fibers in the market
- Sanitary design, with main liquid-contacting materials being 316L stainless steel and FDA-compliant non-metal materials such as EPDM/PTFE/TPE commonly used in pharmaceutical industry
- Resistant to acid and alkali corrosion, liquid-contacting surfaces can be selected with Ra<0.4 μm EP or Ra<0.6 μm MP as needed
- The holder adopts standard TC connector, allowing free adaptation to the system
- Compact and rational system design, resulting in a small footprint
- Simple system configuration and convenient operation
- Can adapt to a filtration area of approximately 0.1-20 m^2
- Pump overpressure protection, mechanical interlocking, safe and reliable opera-tion
- Reliable quality, traceable process, accessible liquid-contacting material certifi-cate and cleanliness certificate
- High-quality service, and accessible FAT/SAT/IQ/OQ service packages that can be purchased according to needs

Product Appliactions

- Vaccine purification
- Virus purification
- Blood product purification
- Monoclonal antibody purification
- Recombinant protein purification
- Endotoxin removal

Lifeforge Manual Ultrafiltration System

PID Flowchart



Product Specifications

Membrane Area	Common filter series: 0.1-0.5 m^2	Common filter series: 0.5-2.5 m^2	Common filter series: 5-10 m^2	Common filter series: 10-20 m^2
Pump	Optional diaphragm pump or peristaltic pump			
Operation Mode	Manual control of TMP, manual control of valves, manual recording of data			
Power Supply	220V/50Hz (P+N+PE) or 380 V/50 Hz (3P+N+PE)			
System Pressure Resistance	Maximum 6 bar			
Operating Temperature	SS 316L; Polymer; EPDM; Silicone; TPE			
Pipeline Material	4-40°C recommended for plastic material part; 4-60°C recommended for SS 316L part			
Sanitary Connection Method	Sanitary chuck			
Liquid-contacting Surface Finish	Optional: Ra<0.4 μm EP or Ra<0.6 μm MP			

Ordering Information

Format

TFH0M5=Manual Ultrafiltration System 0.1-0.5 m^2
TFH2M5=Manual Ultrafiltration System 0.5-2.5 m^2
TFH5M0=Manual Ultrafiltration System 2.5-5 m^2
TFH10M=Manual Ultrafiltration System 5-10 m^2
TFH20M=Manual Ultrafiltration System 10-20 m^2

Diameter

P0=Diaphragm pump
P1=Peristaltic pump

Filter holder

H0=No holder
H1=With holder

Polishing

EP=Ra<0.4 μm EP
MP=Ra<0.6 μm MP

Services

S0=No requirement
S1=FAT
S2=SAT/IOQ
S3=FAT+SAT/IOQ

04

TECHNOLOGY SERVICE

TECHNOLOGY SERVICE

Nexpharma® Process Development Service

Product R&D Related Testing

- R&D testing support for the company's catalog products
- R&D testing support for customized products developed according to the requirements of customer

Product Selection and Filterability Testing

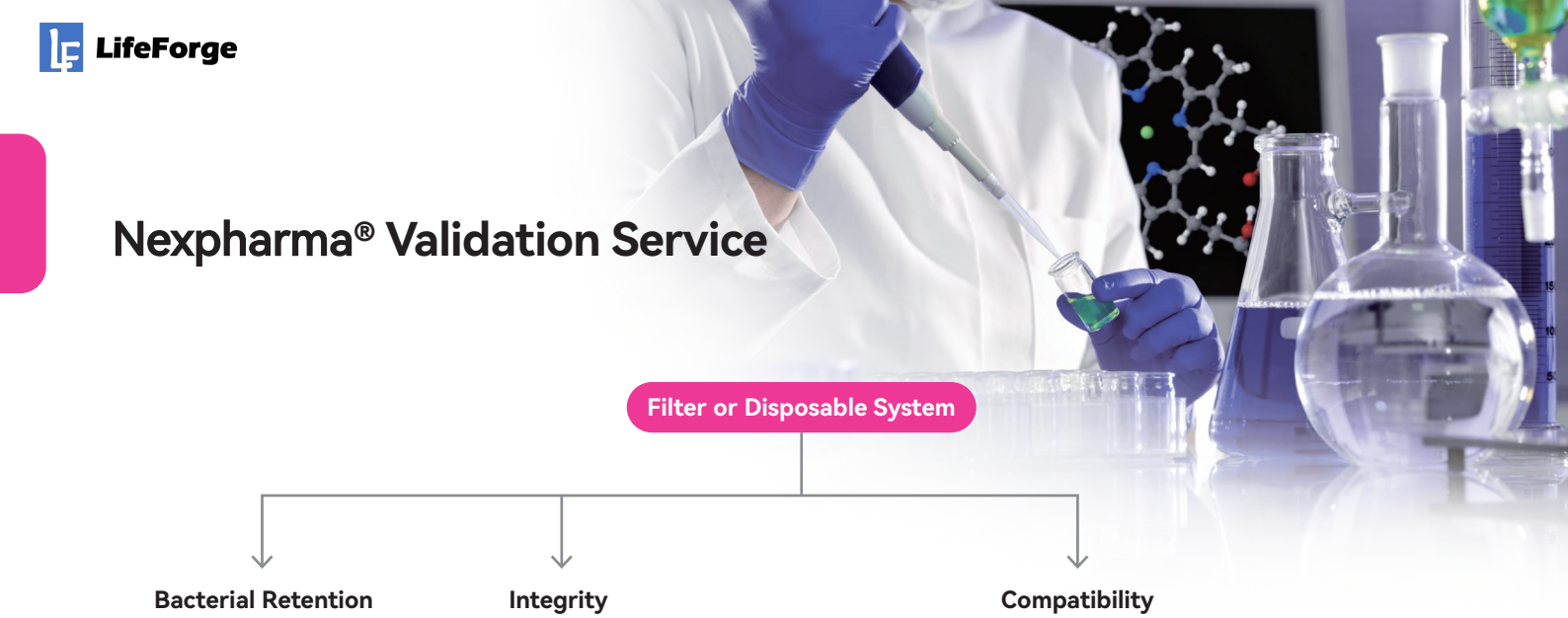
- Testing of product selected by the customer on site and recommendation of scheme
- Training on the experimental operation of sterile/depth filtration, ultrafiltration products
- Design considerations for sterile filtration systems

Process Scale-up Support & Training on Product Use

- Integrity testing procedures
- Precautions for the use, sterilization and operation of filter
- Training on the use and operation of depth filter and holder
- Training on the use of hollow fiber, ultrafiltration filter and holder

Problem Solving and Troubleshooting

- Troubleshooting of integrity testing issues
- Troubleshooting of usage issues with sterilizing, depth filtration products, ultrafiltration products, and other filtration products



Nexpharma® Validation Service

Filter or Disposable System

- **Bacterial Retention**
  - **Viability / Bacterial Challenge**
- **Integrity**
  - **Product Wetted Integrity Test Parameters**
- **Compatibility**
  - **Reactive Compatibility**
  - **Additive Extractables / Leachables**
  - **Absorptive Adsorptiont**

Compatibility Report
Reactive

Adsorption Report
Absorptive

Extractables / Leachables Report
Additives

Safety Assessment Report
Toxicity assessment for additives

Bacterial Challenge Report
Viability and Bacterial retention

Bacterial Challenge Report for Reuse filters
Reuse filters

Compatibility Report for Reuse filters
Reuse filters

Starting from customer requirements, provide a comprehensive and easy-to-understand one-stop service for user processes, validation suggestions, proposals, and reports. The data is rich and facilitates understanding by users and regulatory agencies.

Validation Suggestions

- Evaluate customer processes according to regulatory requirements and develop a validation plan as the major plan for process validation
- Provide clear logic for users and regulatory agencies easily understanding validation documents

Validation Schemes

- Explain validation principles, methods, key parameters and acceptance criteria of the test based on regulatory requirements and industry guidelines
- Action plan for addressing deviations

Validation Reports

- Provide original test data
- Provide calculation methods and derive validation conclusions based on results
- Offer regulatory consulting services related to validation

Lifeforge Laboratory Introduction

Lifeforge validation laboratory provides validation services including Bacterial challenge, Extractables and Leachables, Compatibility, Product-based integrity test values and Binding studies for pharma-ceutical manufacturers. It also conducts in-house validation on company products and provides experimental data for validation guidelines. The laboratory follows ISO9001 quality management system, upholds the concept of data reliability, and ensures that the data is **true, accurate, and traceable.**

The main staff of validation laboratory have rich experience in process validation, and the validation methods are scientifically reasonable, ensuring the provision of filtration process validation services that meet global regulatory requirements. In line with the quality principle of meeting customer needs, the laboratory provides comprehensive validation services to users, including regulatory interpretation, evaluation of process and validation reports, and other consulting services. It also offers process validation services for both our own and other companies' products.

The laboratory is equipped with advanced validation equipment, including high-resolution LCMS-MS, GCMS, sterilization-in-place systems, particle counters, etc., to provide users with reliable validation data.

Lifeforge also has **a process development laboratory, a membrane material R&D center, and a pilot-scale laboratory.** Following the core development concept of Design by Application (DbA) and considering the specific needs of biopharmaceutical companies, it explores new technologies, develops new products, and applies them to the research, pilot-scale and large-scale produc-tion of biopharmaceuticals. The process development laboratory aims to solve key challenges in process development and production for biopharmaceutical customers. It is equipped with advanced process development and pilot-scale equipment, and has technical application experts with many years of experience in biopharmaceutical industry. It can assist enterprise customers with technical consulting, process development, product training, and problem resolution, and promote the rapid progress and transformation of biopharmaceutical R&D projects.

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