

LeClafine® Depth Filters

The LeClafine® series depth filters from LePure Biotechnology offer stable, reliable quality and strong contaminant retention capacity.

The LeClafine® series depth filters are composed of lignocellulose, inorganic filter aids, and cationic resins, featuring high flow rates and large capacity advantages. Positively charged filtration media effectively removes soluble impurities such as DNA and HCP. Wide range of pore size selection meets different filtration precision requirements. Multiple specifications of filtration area can cover the choices from laboratory research and development to large-scale production. The use of low-extractable, low-endotoxin membrane materials provides better product safety.

The LeClafine® series depth filters effectively reduce turbidity while ensuring a high recovery rate, thereby alleviating the burden on down-stream purification processes, helping you shorten process time, reduce production costs, and improve economic benefits.

Procap-P



Procap-M



ST



Midcap



Minicap



Typical Applications

- Clarification filtration of cell harvest liquid
- Clarification of cell lysate
- Pre-filtration of virus inactivated solutions
- Pre-filtration before sterilization or virus removal
- Filtration to reduce impurities or endotoxins
- Filtration of blood product precipitates
- Decolorization & deodorization of solutions
- Removal of particles or colloids in other process steps

Product Advantages

Significant clarification effect

The LeClafine® internal structure is composed of cellulose, filter aids, and positively charged resins stacked and interlaced. Different models vary in composition and ratio according to different filtration needs. Significant turbidity reduction and foreign matter interception are achieved through physical interception and positive charge adsorption (Van der Waals forces) in the interior.

High Capacity

LeClafine® has a high capacity, while achieving turbidity reduction and foreign matter interception. The testing performance of different materials varies. Currently, the primary filtration capacity in the monoclonal antibody generally ranges from 70 to 130 L/m², while the secondary filtration capacity is generally two to three times that of the primary capacity. The primary filtration capacity in the animal vaccine industry generally ranges from 250 to 1200 L/m².

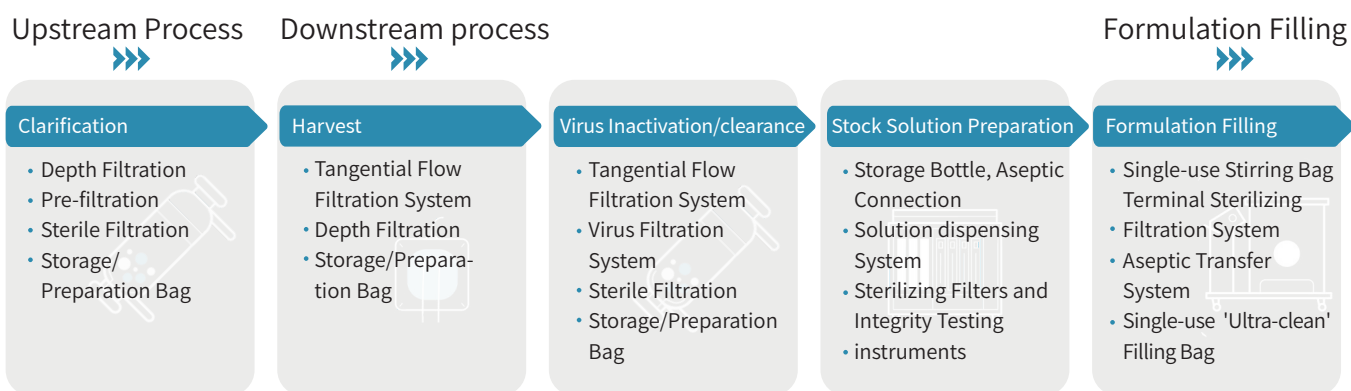
High Protein Recovery Rate

The LeClafine® Depth Filter not only reduces turbidity and intercepts foreign matter but also needs to meet customer requirements for the target protein, which means removing as much impurity protein as possible while retaining the target protein. Generally, monoclonal antibody customers require a protein recovery rate greater than 90%. LeClafine® has been tested multiple times, achieving a protein recovery rate of around 95%, which meets customer needs.

Low leachables, low endotoxin levels

The LeClafine® Depth Filter undergoes certain treatments on raw materials before formal casting, making its internal structure more stable. During filtration operations, it produces fewer downstream leachables. It has been determined that the endotoxin levels in the filter fully meet the regulatory content requirements (i.e., less than 0.25 EU/mL). Certain protection is also provided for operations after depth filtration.

Applications of Depth Filtration in Pharmaceutical Production Processes



Technical parameters

Product specifications	Minicap	Midcap	Procap-P	Procap-M	12 inch	16 inch	
					Single-layer medium	Single-layer medium	Double-layer medium
Filtration area(m²)	0.002	0.03	0.25/0.5/1.0	0.22/0.66/1.1	1.0/1.4/1.6	2.1/3.4/3.8	1.1/1.8/2.3
Inlet and outlet	Luer	¾" TC	1.5" TC	1.5" TC	Double open (DOE)		
Gasket material	—	—	—	—	Silicone rubber / Ethylene propylene diene monomer (EPDM) / Nitrile / Fluorinated rubber		
High-pressure steam sterilization	30 min@121°C, 1 cycle				30 min@121°C, 3 cycles		
Maximum operating temperature	40°C (104°F)				82°C (180°F)		
Maximum Inlet pressure	2.8bar	3.1bar	3.4bar@40°C		—		
Maximum forward pressure differential	2.4 bar@40°C						
Biocompatibility	USP<88>						
Endotoxin	<0.25EU/ml, LAL test						
Height (mm)	71	106	69/96/148	54/90/136	192/258.5/275	192/258.5/275	192/258.5/258.5
Diameter/Size (mm)	41	215	438	Length/ Width: 540/316	285	399	
Dry weight (kg)	0.055	0.9	3.4/4.6/6.9	3.2/5.8/8.4	/	/	/
Wet weight (kg)	0.067	1.1	4.6/7.2/11.0	4.5/9.5/14.4			
Minimum top wash volume (L)	0.012	0.222	1.2/2.7/4.1	/			
Shell material	Poly-propylene + Glass fiber	Poly-propylene + Glass fiber	Polypropylene + Glass fiber	Polypropylene + Glass fiber			
Recommended pre-flush volume (L)	0.1	1.5	12.5/25/50	11/33/55			
Recommended flow rate (L/min)	0.01	0.15	1.25/2.5/5	1.1/3.3/5.5			

Ordering information

LeClafine® series depth filter

Filter type	Product specifications	Filtration unit	Filtration medium		Diameter size	Functional version	Packaging
C= LeClafine® Depth filter	MN=Minicap	S01=Single layer 1 set D01=Double layer 1 set	C1=8~20 μm C5=1~10 μm F1=0.5~3 μm F3=0.2~1 μm F6=0.1~0.8 μm F9=0.05~0.5 μm K9=0.02~0.2 μm	POB series: P1 P2 P3 P4 P1P2 P2P3 P3P4		G= Standard version T= Synthetic S= Functional type	1=1 piece/ package 4=4 pieces/ package
	MD=Midcap	D01=Double layer 1 set					
	PL=Procap-P*	D01=Double layer 1 set D02=Double layer 2 sets D04=Double layer 4 sets					
	PK=Procap-M	D02=Double layer 2 sets D06=Double layer 6 sets D10=Double layer 10 sets	Double layer : C1C5=1.0~20 μm F3F9=0.05~1 μm F6F9=0.05~0.8 μm		A=12" Diameter (Single layer only) B=16" D=16" with mesh E=12" with mesh		
	ST= Cartridge Filters	S09=Single layer 9 sets S14=Single layer 14 sets S16=Single layer 16 sets D02=Double layer 2 sets D05=Double layer 5 sets D08=Double layer 8 sets D10=Double layer 10 sets					

LeClafine® POB series depth filter

Filter type	Product specifications	Filtration unit	Filtration medium	Diameter size	Functional version	Packaging
C= LeClafine® Depth filter	MN=Minicap MD=Midcap	D01=Double layer 1 set	Single layer P1 P2 P3 P4 Dual layer Upper and lower layers can be any combination of single layers		G= Standard version T= Synthetic S= Function- al type	1=1 piece/ package
	PL=Procap-P*	D01=Double layer 1 set D02=Double layer 2 sets D04=Double layer 4 sets				4=4 pieces/ package
	PK=Procap-M	D02=Double layer 2 sets D06=Double layer 6 sets D10=Double layer 10 sets				
	ST=Cartridge	S09=Single layer 9 sets S14=Single layer 14 sets S16=Single layer 16 sets D02=Double layer 2 sets D05=Double layer 5 sets D08=Double layer 8 sets D10=Double layer 10 sets		A=12" (only for single layer) B=16"		

LeClafine® RC series depth filter

Filter type	Product specifications	Filtration unit	Filtration medium	Diameter size	Functional version	Packaging
C= LeClafine® Depth filter	MN=Minicap	M1= Single layer 1 set	C045 R045 B045		C= Activated Carton	1= 1 pieces/pack
	MD=Midcap	M1= Single layer 1 set M3= Single layer 3 set				4 = 4 pieces/pack
	ST=Cartridge	S07=Single layer 7 sets S13=Single layer 13 sets S14=Single layer 14 sets		A=12" B=16" C=8		

* Filtration area as follows, Minicap=20cm² , Midcap M1=330cm² , Midcap M3=1000cm², ST-8" with filtration unit of S07=0.23m², ST-12" with filtration unit of S13=1.45m², ST-16" with filtration unit of S14=3.4m²

LeClafine® series depth filter plates

Filter type	Product specifications	Dimension code	Filtration medium		Functional version	Packaging
C= LeClafine® Depth filter	FS = Square filter plate	L01=500*500 mm L02=1000*1000 mm	C1=8~20μm C5=1~10μm F1=0.5~3μm F3=0.2~1μm F6=0.1~ 0.8μm F9=0.05~0.5μm	POB series: P1 P2 P3 P4	G= Standard version	25 = 25 pieces/pack
	FC = Round filter plate	D01=550 mm D02=380 mm			T= Synthetic S= Functional type	50 = 50 pieces/pack

LeClafine® filter cartridge

Compatible with the LeClafine® ST membrane stack series, meeting the requirements of process fluids and production environments from laboratory to production scale. Fully enclosed filtration system, no leakage risk, significantly reduced labor costs and maintenance expenses, along with a small footprint, making the LeClafine® filter cartridge an ideal choice.

Product Advantages

- Fully enclosed design, isolating external contamination, safe operation, eliminating leakage and material loss
- Can install different numbers of membrane stacks according to different volume scales, easy to scale linearly
- Hygienic design, mirror polishing minimizes biological attachment
- Hygienic pipes and valves, equipped with complete exhaust valves and check valves
- Spring locking sealing system, safe and convenient operation
- Small footprint, lightweight and flexible, easy to assemble and disassemble



Fully enclosed system

Protects the safety of operators while avoiding external contamination

System structure

Rational structural design, made of 316L stainless steel, mirror polished

Membrane stack specifications

Up to 4 membrane stacks can be stacked in a single row

Connection method

Bolt or clamp, quick assembly and

Technical parameters

LeClafine® filter cartridge technical parameters

Operating parameters

Maximum operating pressure and temperature	6bar(87psi)@142°C(287.6°F)
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Material parameters

Parts in contact with the material	316L stainless steel
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Parts not in contact with the material	304 stainless steel
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O-rings/gaskets	Silicone rubber
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Connectors and accessories

Cylinder connection	Quick-release clamp
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Pressure gauge	Standard configuration
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Numbers of stacks	Height h (mm)	Inlet and outlet pipe diameter d (mm)	Total height H(mm)
12 inch			
1	300	25.4	850
2	580	32	1130
3	860	38.1	1410
4	1140	50.8	1690
16 inch			
1	300	25.4	870
2	580	32	1150
3	860	38.1	1430
4	1140	50.8	1710

LeClafine® filter cartridge Order information

C S T H

Product name

A

Diameter of
membrane stack

A=12 inch

B=16 inch

1

Number of
membrane stacks

1=1 pcs

2=2 pcs

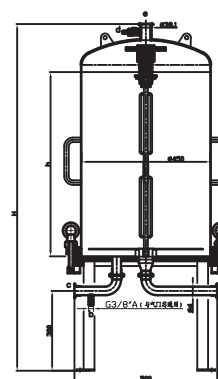
3=3 pcs

4=4 pcs

1

Packaging
specifications

1=1 unit/box



LeClafine® Holder

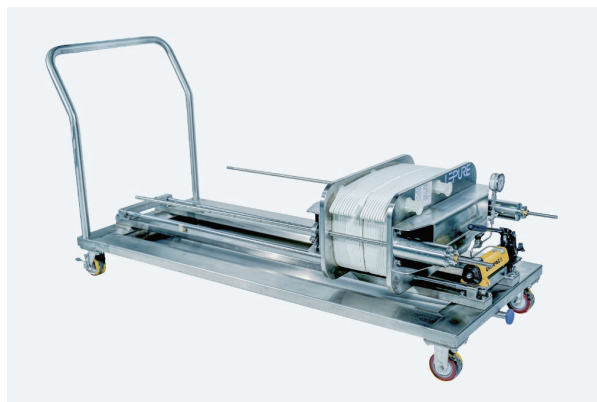
The LeClafine® SU capsule series utilizes stainless steel holder, simplifying cleaning and validation processes, making it the preferred choice for disposable depth filtration systems. Available in both vertical and horizontal forms, suitable for various depth capsule filter

Product Advantages

- ⦿ Designed with ergonomics in mind, the operation is intuitive and simple, and hydraulic devices can be provided for convenience, safety, and reliability.
- ⦿ Single-stage and two-stage depth filtration can be completed within a single holder.
- ⦿ From small-scale trials to linear scalability for GMP production, it can be achieved through parallel configurations to meet different production requirements.
- ⦿ Fully disposable system, free from cleaning validation.
- ⦿ All control devices are provided by the deep filtration system. No additional external control devices are required.
- ⦿ All wetted parts (valves, pipes, and tubing) are made of 316L stainless steel.



Procap-P vertical holder



Procap-M horizontal holder

LeClafine® clamp ordering information

Product specifications	BTFSZ001	BTFSZ002	BTFSZ003	BTFSZ004
Description	Vertical Manual Clamp	Vertical Hydraulic Clamp	Vertical Hydraulic Clamp	Vertical Hydraulic Clamp
Maximum clamping quantity	5pieces	5pieces	10 pieces	10 pieces
Maximum usable area	5m ²	5m ²	10m ²	10m ²
Bare weight of the equipment	200kg	250kg	200kg	250kg
Equipment dimensions	1000*800*1540	1000*800*1540	1000*800*2262	1000*800*2096
Delivery Time	30days	45days	30days	45days

Product specifications	BTFSZ005	BTFSZ006	BTFSZ007	BTFSZ008	BTFSZ009
Description	Horizontal Hydraulic Clamp	Horizontal Hydraulic Clamp	Horizontal Hydraulic Clamp	Vertical Hydraulic Clamp	Vertical Hydraulic Clamp
Maximum clamping quantity	2 pieces	5 pieces	10 pieces	20 pieces	30 pieces
Maximum usable area	2.2m ²	5.5m ²	11m ²	22m ²	33m ²
Bare weight of the equipment	110kg	230kg	280kg	560kg	1000kg
Equipment dimensions	950*705*900	1380*705*900	1880*880*900	1880*880*1450	1880*880*169
Delivery Time	30days	45days	30days	45days	45days

Verification

According to the verification guidelines, deep filters must undergo verification guideline testing items. LeClafine® must undergo strict verification before being used by customers. Lechun Biotechnology has a professional quality inspection team to control product quality, ensuring high quality and reducing batch-to-batch variation.