

VirusClear VF Plus

Virus Removal Filter





◀ Viruclear VF Plus Plastic-housing cassette

Viruclear VF Plus

New Generation Reliable & Effective Virus Removal Filter

At present, virus removal filtration is regarded as a very effective and robust step for virus retention and has been widely applied in biologics manufacturing due to advantages such as simple and gentle operation, clear mechanism and ease of validation. The virus removal filters with a cut-off pore size of 20 nm are the most widely used products as it provides high retention assurance toward minute viruses.

Virus retention is basically achieved by size exclusion mechanism. The pore size of membrane retention layer is larger than the size of feed stream proteins yet smaller than the size of viruses. In this way, feed stream proteins are able to pass through the membrane while the viruses are retained on the upper surface or inside the porous structure. High levels of virus retention can thus be reached for both parvoviruses and viruses of larger size, which exactly takes the benefited of the size exclusion mechanism.

Cobetter's new generation virus removal filter Viruclear VF Plus adopts PES membrane with a continuous gradient structure. It provides sufficient space for retention of the foulant which are basically protein aggregates. The pore size on the downstream side of the membrane is uniformly distributed around 20 nm that endows the membrane with robust virus retention even under the condition of process interruption or depressurization.

Viruclear VF Plus further develops the hydrophilicity of the PES membrane. Progress in the meantime are made toward optimization of the membrane pore configuration. The upgradation gives improved mass capacity and adaptability across a broad range of typical protein feed streams, thus brings increased process economics. Viruclear VF Plus also enables robust linear scale-up so as to ease the process design and optimization.



▲ Viruclear VF Plus Silicone Cassette

Features

- PES membrane has a unique surface hydrophilic improvement, which endows virus removal membranes with high filtration capacity and product yield
- Asymmetric membrane structure, high porosity, which endows the membrane with high flux
- Water flux greater than 500LMH@30psi 25°C
- Narrow pore size distribution gives the membrane good separation performance
- Robust parvovirus removal capacity
- Model virus removal rate $\geq 4.0\log$
- Robust virus removal capacity even under process interruption
- Good chemical stability
- Easy to install, use and test

Typical Application

Monoclonal antibody

Bispecific antibody

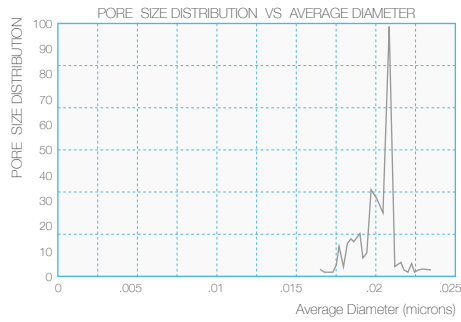
Fc-fusion protein

Nanobody

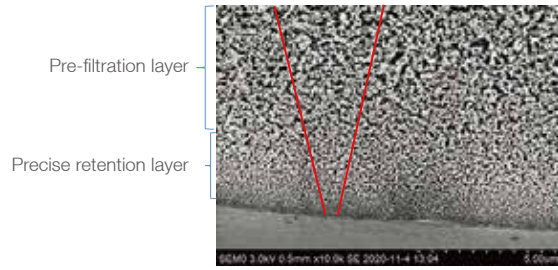
Recombinant Covid-19 vaccine

Small-molecule recombinant proteins (< 180 kD), etc.

Virus Removal Filter Membrane Pore Size Distribution



Viruclear VF Plus membrane pore size distribution



SEM image of virus removal filter membrane

Product Specifications

	Product Specifications	Effective Filtration Area	Application
Application	DS series	2.5cm ²	For process development and virus clearance validation research
	Membrane	4.1cm ²	For process development and virus clearance validation research
	Pilot device	0.017/0.07/0.22m ²	≤200L
	Production device	0.50/1.50m ²	>200L
Nylon Pre-filtration	DS series	3.4cm ²	For process development and virus clearance validation research
	Pilot device	0.025/0.12/0.30m ²	≤200L
	Production device	0.60/1.20/1.8m ²	>200L
Depth Pre-filtration	DS series	4.5cm ²	For process development and virus clearance validation research
	Pilot device	0.027/0.15/0.4m ²	≤200L
	Production device	0.92/1.1m ²	>200L

Material of Products

	Specifications	Material of Membrane	Format	Shell	Effective Filtration Area	Accessories Material
Removal Virus	DS series	PES	Syringe filter	Polypropylene	2.5cm ²	-
	Pilot device	PES	Disposable capsule filter	Polyvinylidene fluoride	0.017/0.07/0.22m ²	Silicone, Polypropylene
			Membrane Cassette	Silicone	0.018/0.08/0.26m ²	Polypropylene
	Production device	PES	Disposable capsule filter	Polyvinylidene fluoride	0.50/1.50m ²	Silicone, Polypropylene
Membrane Cassette			Silicone	0.50/1.50m ²	Polypropylene	
Nylon Pre-filtration	DS series	Nylon	Syringe filter	Polypropylene	3.4cm ²	Silicone
	Pilot device	Nylon	Disposable capsule filter	Polypropylene	0.025/0.12/0.30m ²	Silicone
	Production device	Nylon	Disposable capsule filter	Polypropylene	0.60/1.20/1.80m ²	Silicone
Depth Pre-filtration	DS series	Cellulose, diatomite	Syringe filter	Polypropylene	4.5cm ²	Silicone
	Pilot device	Cellulose, diatomite	Disposable capsule filter	Polypropylene	0.027/0.15/0.4m ²	Silicone
	Production device	Cellulose, diatomite	Disposable capsule filter	Polypropylene	0.92/1.1m ²	Silicone

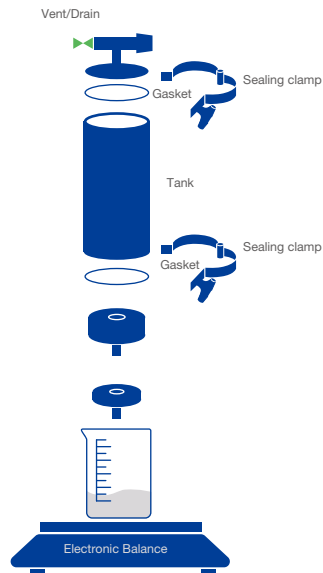
Virus Removal Filtration Process Development Service

Our technical engineers will work with customers to optimize the process parameters during the process development of virus removal filtration to obtain a robust, efficient and economical filtration operation.

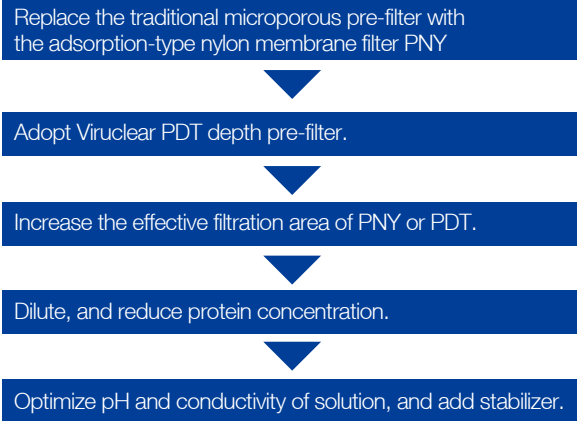
Virus Removal Filterability Testing Device



Virus Removal Assembly Sketch Map

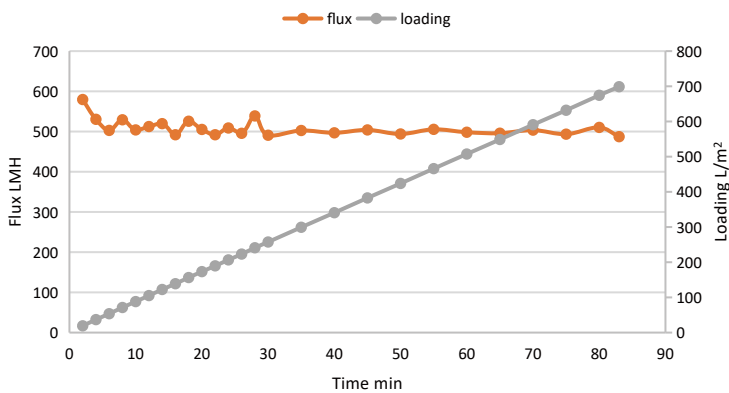


Optimization Strategy of Virus Removal Filtration Process



Customer Application Case

Test conditions: mAb concentration 16.4 g/L; constant pressure at 30 psi; series filtration with Viruclear PDT depth filter; post-filtration buffer flush volume: 30L/m².



Filtration kit	Viruclear PDT + VF Plus
Filtration time (min)	83
Flux decay at filtration endpoint(%)	8
Capacity at filtration endpoint L/m ²	698.8
Average flux(LMH)	505
Protein recovery(%)	99

Order Information

Viruclear PDT Virus Removal Pre-Filter (Depth Filter)

V P

Application

VP Viruclear PDF



D T

Material of Membrane

DT Depth filter

Type

DS Syringe filter
(4.5cm²)

Quantity/Package

N9 Only for syringe filter,
9pcs / pk
N1 1pcs / pk

P

Market

P Biopharmaceutical

Viruclear PDT Virus Removal Pre-Filter (Depth Filter)

V P

Application

VP Viruclear PDF



D T

Material of Membrane

DT Depth filter

Type

L4 L08TT(0.027m²)
SA CSCD(0.15m²)
SC CSCE(0.4m²)

Quantity/Package

N1 1pcs / pk

P

Market

P Biopharmaceutical

Viruclear PDT Virus Removal Pre-Filter (Depth Filter)

V P

Application

VP Viruclear PDF



D T

Material of Membrane

DT Depth filter

Type

SB CSCB(0.92m²)
SM CSCM(1.1m²)

Quantity/Package

N1 1pcs / pk

P

Market

P Biopharmaceutical

Order Information

Viruclear PNY Virus Removal Pre-Filter (Nylon Filter)

V P

Application

VP Viruclear PNY

N Y

Material of Membrane

NY mNylon,
Modified nylon
membrane

Type

DS Syringe filter
(3.4cm²)

Quantity/Package

N9 Only for syringe filter,
9pcs / pk
N1 1pcs / pk

P

Market

P Biopharmaceutical



Viruclear PNY Virus Removal Pre-Filter (Nylon Filter)

V P

Application

VP Viruclear PNY

N Y

Material of Membrane

NY mNylon,
Modified nylon
membrane

Type

C02 250cm²
L02 0.12m²
L05 0.30m²

Type

TT 3/4" TC

Quantity/Package

N1 1pcs / pk

P

Market

P Biopharmaceutical



Viruclear PNY Virus Removal Pre-Filter (Nylon Filter)

V P

Application

VP Viruclear PNY

N Y

Material of Membrane

NY mNylon,
Modified nylon
membrane

Type

L10 0.60m²
L20 1.20m²
L30 1.80m²

Type

SS 1 1/2" TC

Quantity/Package

N1 1pcs / pk

P

Market


P Biopharmaceutical



Order Information


Viruclear VF Plus Virus Removal syringe filter with PP shell

V F	P	M P	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	P
Application		Material of Membrane	Type	Quantity/Package	Market
VF Virus filtration	P Plus	MP mPES, Hydrophilic modified PES membrane	DS Syringe filter (2.5cm ²)	N9 Only for syringe filter, 9pcs/pk (3 batches, 3 pcs per batch) N1 1pcs / pk	P Biopharmaceutical




Viruclear VF Plus Virus Removal membrane filter

V F	P	M P	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	P
Application		Material of Membrane	Type	Membrane Diameter	Market
VF Virus filtration	P Plus	MP mPES, Hydrophilic modified PES membrane	FS Circular membrane, should be installed in holder to use	25 Only for membrane filter, diameter 25mm	P Biopharmaceutical




Viruclear VF Plus Virus Removal capsule filter with PVDF shell

V F	P	E	S	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	P
Application		Material of Membrane	Configuration Code	Type	Filtration Area	Quantity/Package	Market
VF Virus filtration	P Plus	E PES (same as mPES)	S Standard	LA Lab (0.017m ² &0.07m ²) FL Flow (0.22m ² 0.50m ² &1.50m ²)	002 0.017m ² 008 0.07m ² 026 0.22m ² 050 0.50m ² 150 1.50m ²	N1 1pcs / pk	P Biopharmaceutical



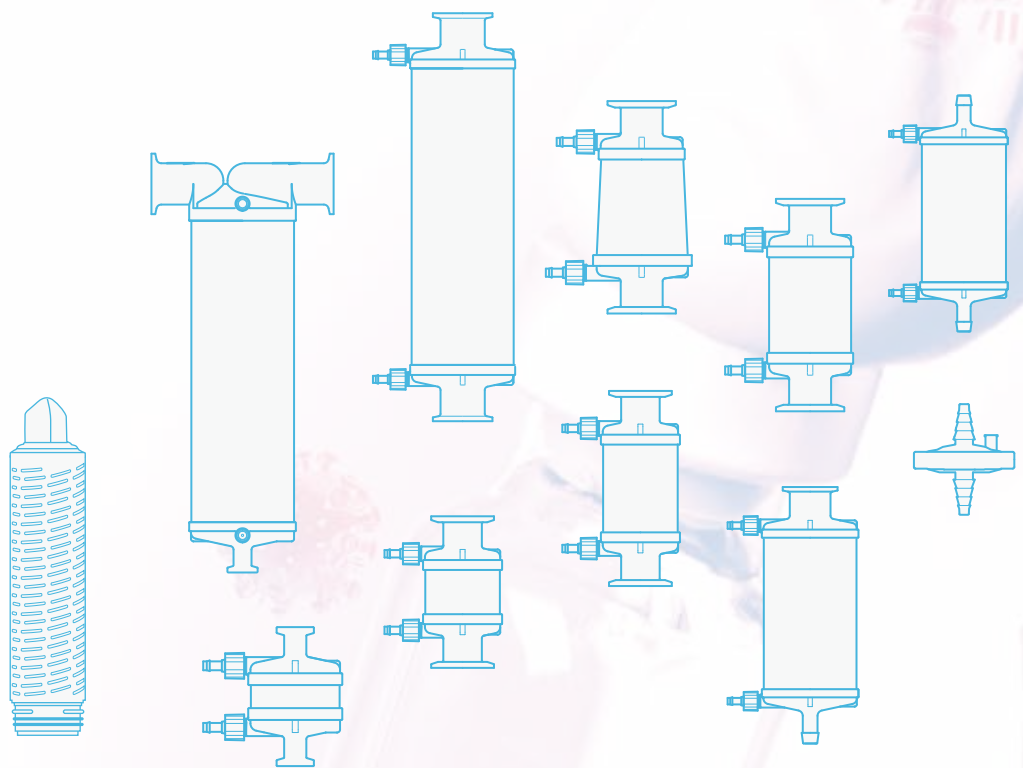
Viruclear VF Plus Virus Removal membrane cassettes

V F	P	M P	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	P
Application		Material of Membrane	Type	Quantity/Package	Market
VF Virus filtration	P Plus	MP mPES, Hydrophilic modified PES membrane	A1 Pilot device 1 (0.018m ²) A2 Pilot device 2 (0.08m ²) B1 Amplification device 1 (0.26m ²) B2 Amplification device 2 (0.5m ²) B3 Amplification device 3 (1.5m ²)	N1 1pcs / pk	P Biopharmaceutical



Our Mission

Through Excellent Products & Sustainable Innovative Solutions,
We Help Customers Solve Process Problems & Increase Yield.



Please contact us for more information

Hangzhou Cobetter Filtration Equipment Co.,Ltd.

Sales Add 13-18 F, Building 1, Zicheng International Innovation Center,
No.39 Jincheng Road, Xiaoshan District, Hangzhou 311215, China

Factory Cobetter Park, Heshang New Material Industrial Park,
Xiaoshan District, Hangzhou 311265, China

Tel +86 400-070-4266

Fax +86-571-87704256

www.cobetterfiltration.com