

Viruclear RC Series

Virus Filter Designed
For Complex Process Fluids



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Virus Filter Designed for Complex Process Fluids

Virus filtration is a robust virus clearance method in the production process of common biopharmaceutical products. Due to its simple and gentle operation, clear mechanism, and ease of validation, it has been widely used to ensure biological products' virus safety.

The Viruclear RC series has a nominal pore size of 20 nm. Based on a size exclusion mechanism, it can effectively remove a variety of viral particles, including parvoviruses.

Rigid Plastic Cassette Format



Silicone Cassette Format



Cobetter's new Viruclear RC series virus removal filters, made from regenerated cellulose, are specifically designed for difficult-to-filter protein solution. The natural excellent hydrophilicity of regenerated cellulose makes it have lower adsorption, higher protein recovery rate, and better filterability in complex liquids containing hydrophobic proteins, aggregates and other impurities.

The Viruclear RC series will serve as another solution to address the underperforming projects of the Viruclear VF plus series. It is particularly suitable for biological products from human plasma, providing customers with a more comprehensive virus filtration solution.

The Viruclear RC series can be provided in the form of silicone cassette containing preservation solution, and rigid plastic cassette with pure water package. The rigid plastic cassette is shipped with sterile package, while the integrated cassette does not require a fixture. Customers may choose according to their own applications.

Product Features

- RC membrane has natural excellent hydrophilic properties providing virus removal membrane with low adsorption and high yield
- Asymmetric membrane structure and pre-filtration layer on the upper surface give the membrane excellent anti-fouling performance
- Composite supported membrane structure effectively improves the strength of the filter membrane
- The narrow pore size distribution of the selective layer gives the membrane good separation performance
- Robust virus removal capabilities
- Chemically stable
- Ease of installation, filtration and integrity test

Typical Application

- Coagulation factors
- Immunoglobulin
- Biochemical extract
- Fusion protein
- Antibodies

Viruclear RC

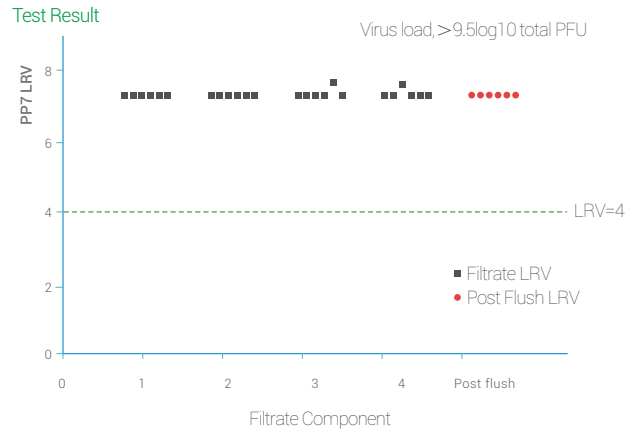
Regenerated Cellulose Virus Removal Filter

Robust Removal of Virus

Test Condition

The test temperature was 21°C, and 6 parallel experiments were set up to conduct PP7 phage retention tests to evaluate the virus clearance ability.

Filter	Viruclear RC
Model Virus	PP7, spiking load > 10 ⁷ PFU/mL
Sampling Points	50L/m ² , 100L/m ² , 150L/m ² , 200L/m ²
Pressure Release Duration	30min
Post-use Buffer Flush	20L/m ²



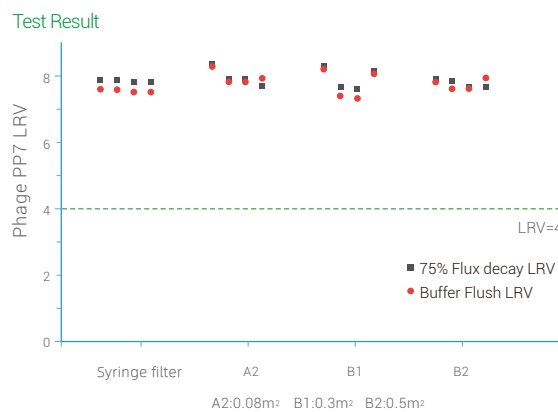
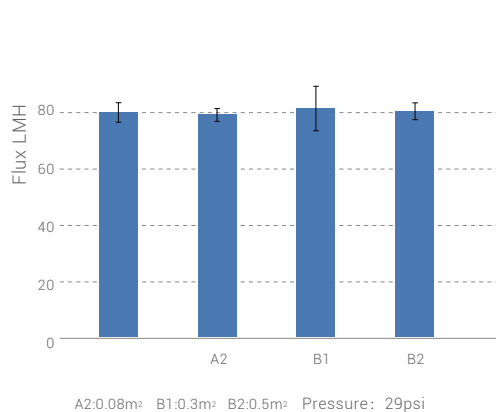
The protein solution was 0.1 g/L IVIG pre-filtered by 0.22µm prefilter.

Model virus selection: Pseudomonas aeruginosa PP7 phage is specified in the PDA TR41 regulation as a model virus for parvovirus.

Viruclear RC has a robust virus removal capability. Even under the worst-case scenario of multiple pressure interruptions during filtration, Viruclear RC maintains robust virus retention.

Linear Scalability

The RC filter series demonstrates consistent water flux across different scales with robust virus clearance capability, exhibiting excellent linear scalability.



Viruclear RC H

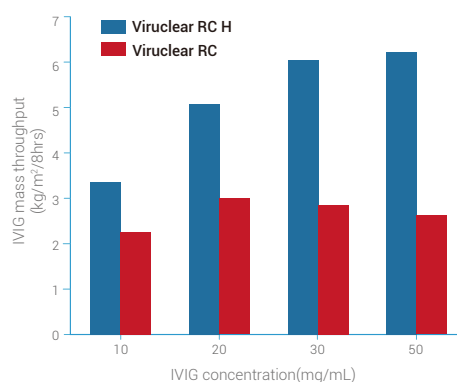
RC Material Virus Removal Filter Suitable for High-Concentration Feed Solutions

Featuring a robust regenerated cellulose (RC) membrane, the newly launched RC H series provides improved structural stability, maintaining consistent pore size and flow channels during constant pressure filtration. The RC H filter enables higher process fluxes with high-concentration protein solutions and offers increased protein mass capacity for complex feed streams, all while providing robust virus removal. This filter finds particular application in the virus clearance step for blood products, such as high-concentration Intravenous Immunoglobulin (IVIG).

Higher Mass Capacity

The filtration performance of the RC and RC H filters was compared under constant pressure conditions (30 psi) at room temperature. Parallel experiments were conducted to filter IVIG solutions of different concentrations. Then compare protein mass throughput after 8 hours of filtration. This result thus serves to highlight the performance differential between the two filters in high-concentration liquid applications.

Test result



Viruclear RC, Viruclear RC H 8-hour mass loading diagram of filtration of IVIG materials with different concentrations

Robust Virus Retention Capability

Test Condition

PPV retention test of IVIG from multiple customers

Filter	Viruclear RC H Syringe Filter
Model virus	PPV, 10 ⁷ total PFU or 4% volume ratio
Protein solution	3 batches of 5% IVIG solution from 4 customers
Constant pressure	2.0~2.5bar



Test Result



No PPV was detected in all tests

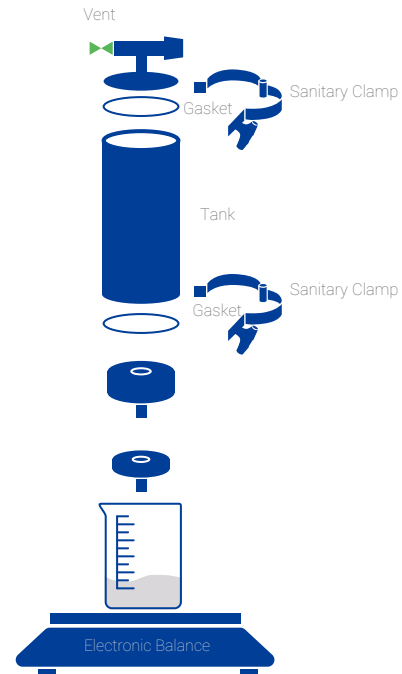
Virus Removal Filtration Process Development Services

Our technical engineers will work with customers to optimize the process parameters of the virus removal filtration process to obtain stable, efficient and economical filtration operations.

Virus Removal Filterability Experimental Device



Schematic Diagram of Virus Removal Filter Assembly



Product Specifications

	Product Specifications	Filtration Area	Proceeding Amount
Viruclear RC Series Virus Removal Filter	Syringe filter	2.5cm ²	Process development and virus removal verification
	Pilot scale	0.015 / 0.08 / 0.3 / 0.5m ²	≤ 100L
	Production scale	1.5m ²	> 100L

Filter Structural Materials

	Scale	Membrane Material	Cassette Format	Component(Shell)	Filtration Area	Accessories Material
Viruclear™ RC Series	DS	RC	Syringe	PP	2.5cm ²	Silicone
	Pilot Scale	RC	Silicone cassette Rigid Plastic cassette	Silicone Epoxy-resin	0.015/0.08/ 0.3/0.5m ²	PP
	Production Scale	RC	Silicone cassette Rigid Plastic cassette	Silicone Epoxy-resin	1.5m ²	PP
Corevital™ SMDA Series	DS	PVDF	Syringe	PP	0.72/3.4/4.5cm ²	-
	Pilot Scale	PVDF	Single-use capsule filter	PP	180/420/660cm ² 0.12/0.16/0.28m ²	Silicone rubber
	Production Scale	PVDF	Single-use capsule filter	PP	0.55/1.1/1.65m ²	Silicone rubber
Viruclear™ PNY Series	DS	Nylon	Syringe	PP	3.4cm ²	-
	Pilot Scale	Nylon	Single-use capsule filter	PP	0.025/0.12/0.3m ²	Silicone
	Production Scale	Nylon	Single-use capsule filter	PP	0.6/1.2/1.8m ²	Silicone
Viruclear™ PCE Series	DS	PES	Syringe	PVDF	2.8cm ²	PP
	Pilot Scale	PES	Plastic-housing cassette	PVDF	0.017/0.07/0.22m ²	PP
	Production Scale	PES	Plastic-housing cassette	PVDF	0.5/1.5m ²	PP
Viruclear™ PDT Series	DS	Cellulose, DE, Nylon	Syringe	PP	4.5cm ²	-
	Pilot Scale	Cellulose, DE, Nylon	Single-use capsule Filter	PP	0.027/0.15/0.4m ²	Silicone / PP
			Single-use capsule Filter(M02)	PP/GF	0.027/0.054m ²	
Production Scale	Cellulose, DE, Nylon	Single-use capsule Filter	PP	0.92/1.1m ²	Silicone / PP	
		Single-use capsule Filter(M02)	PP/GF	0.11/0.55/1.1m ²		
Viruclear™ PDS Series	DS	Silica, composite fiber, Nylon	Syringe	GF reinforced PP	4.5cm ²	Silicone rubber
	Pilot Scale	Silica, composite fiber, Nylon	Single-use capsule Filter	GF reinforced PP	0.027/0.054m ²	Silicone rubber
	Production Scale	Silica, composite fiber, Nylon	Single-use capsule Filter(M02)	GF reinforced PP	0.11/0.55/1.1m ²	Silicone rubber

Ordering Information

Corevital™ SMDA Prefilter

Bricap™ SFU Syringe filter



Syringe Filter Scale

U13 0.72cm²

U22 3.4cm²

U33 4.5cm²



Connection type

CP Luer lock Female Luer

Luer lock Male Luer

SMDA

Filter Membrane Configuration

SMDA SMDA 0.2/0.1µm



Sterilization method

G Gamma Compatible



Package

1 1 pc/pk



Industry Code

P Biopharmaceutical



Bricap™ C Series Capsule Filter



Shell Type

Blank Normal

K Transparent



Syringe Filter Scale

C01 180cm²

C02 420cm²

C03 660cm²



Inlet/outlet type

T 19mm(3/4")sanitary flange

K 14mm(9/16")sanitary flange

F 31mm(1 1/4")sanitary flange

SMDA

Filter Membrane Configuration

SMDA SMDA 0.2/0.1µm



Sterilization method

A Autoclavable only

G Gamma Compatible

S Sterile capsule filter

C Sterile breathing bag sterile packaging



Package

1 1 pc/pk



Product type

Blank Standard

Q



Industry Code

P Biopharmaceutical



Bricap™ L Series Capsule Filter



Shell Type

Blank Normal

K Transparent



Syringe Filter Scale

L02 0.12m²

L03 0.16m²

L05 0.28m²

L10 0.55m²

L20 1.1m²

L30 1.65m²



Inlet/outlet type

S 38mm(1 1/2")sanitary flange

T 19mm(3/4")sanitary flange

K 14mm(9/16")sanitary flange

SMDA

Filter Membrane Configuration

SMDA SMDA 0.2/0.1µm



Sterilization method

A Autoclavable only

G Gamma Compatible

S Sterile capsule filter

C Sterile breathing bag sterile packaging



Package

1 1 pc/pk



Product type

Blank Standard

Q



Industry Code

P Biopharmaceutical



Ordering Information

Viruclear™ PNY Prefilter Syringe Filter

V P

Application

VP

N Y

Membrane Material

NY Nylon

□ □

Component code

DS Syringe filter
Filtration area 3.4cm²

□ □

Number of filters per package

N9 For syringe filters only,
one package contains 9 filters

N1 Single package

P

Industry Code

P Biopharmaceutical



Capsule Filter

V P

Application

VP

N Y

Membrane Material

NY Nylon

□ □ □

Component code

C02 250cm²
L02 0.12m²
L05 0.3m²

□ □ □

Component code

TT 3/4 inch,
TC connection

□ □

Number of filters per package

N1 Single package

P

Industry Code

P Biopharmaceutical



V P

Application

VP

N Y

Membrane Material

NY Nylon

□ □ □

Component code

L10 0.6m²
L20 1.2m²
L30 1.8m²

□ □ □

Component code

SS 1.5 inch,
TC connection

□ □

Number of filters per package

N1 Single package

P



Industry Code

P Biopharmaceutical






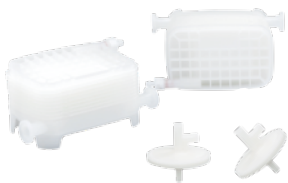
Ordering Information

Viruclear™ PCE Prefilter Syringe Filter



V P	C E			P
Application	Membrane Material	Scale	Package	Industry Code
VP	CE Cationic modified PES membrane	DC 2.8cm ²	N9 9 pcs/pk N1 1 pc/pk	P Biopharmaceutical

Plastic-housing Cassette

V P	C E				P
Application	Membrane Material	Scale	Filtration Area	Package	Industry Code
VP	CE Cationic modified PES membrane	LA Lab(0.017m ² & 0.007m ²) FL Flow(0.22m ² & 0.5m ² & 1.5m ²)	002 0.017m ² 008 0.07m ² 026 0.22m ² 050 0.5m ² 150 1.5m ²	N1 1 pc/pk	P Biopharmaceutical



Viruclear™ PDS Prefilter (Synthetic Depth Filter)

V P	D S			P
Application	Membrane Material	Membrane cassette scale (Effective filtration area)	Package	Industry Code
VP	DS Synthetic depth media	DS 4.5cm ² 27 M02 0.027m ² 54 M02 0.054m ² M1 M02 0.11m ² M5 M02 0.55m ² MX M02 1.1m ²	N9 9 pcs/pk(only for syringe filter) N1 1 pc/pk	P Biopharmaceutical



Ordering Information

Viruclear™ PDT Pre-filter(Depth filter)

V P
Application
VP



D T
Membrane Material
DT Depth Filter

DS
Membrane Cassette Code
DS Syringe Filter
Filtration area 4.5cm²

N9
Package
N9 9 pcs/pk(only for syringe filter)
N1 1 pc/pk

P
Industry Code
P Biopharmaceutical

Viruclear™ PDT Virus Removal Pre-filter(Depth filter)

V P
Application
VP



D T
Membrane Material
DT Depth Filter

L4
Membrane Cassette Code
L4 L08TT
Filtration area 0.027m²

SA CSCD
Filtration area 0.15m²

SC CSCE
Filtration area 0.4m²

27 M02
Filtration area 0.027m²

54 M02
Filtration area 0.054m²

N9
Package
N9 9 pcs/pk(only for syringe filter)
N1 1 pc/pk

P
Industry Code
P Biopharmaceutical

Viruclear™ PDT Virus Removal Pre-filter(Depth filter)

V P
Application
VP



D T
Membrane Material
DT Depth Filter

SB
Membrane Cassette Code
SB CSCB
Filtration area 0.92m²

SM CSCM
Filtration area 1.1m²

M1 M02
Filtration area 0.11m²

M5 M02
Filtration area 0.55m²

MX M02
Filtration area 1.1m²

N1
Package
N1 1 pc/pk

P
Industry Code
P Biopharmaceutical

Ordering Information

Viruclear™ RC Syringe Filter

V F

Application

VF Virus filtration

R C

Membrane Material

RC Regenerated cellulose

Membrane Cassette Code

DS Syringe Filter
Filtration area 2.5cm²

Package

N9 9 pcs/pk(only for syringe filter)
N1 1 pc/pk

P

Industry Code

P Biopharmaceutical



Viruclear™ RC Silicone Cassette

V F

Application

VF Virus filtration

R C

Membrane Material

RC Regenerated cellulose

Disposable Deflector

N Non-integrated

Membrane Cassette Code

A1 Pilot Component 1
Filtration Area 0.015m²
A2 Pilot Component 2
Filtration Area 0.08m²
B1 Scale-up component 1
Filtration Area 0.3m²
B2 Scale-up component 2
Filtration Area 0.5m²
B3 Scale-up component 3
Filtration Area 1.5m²

Package

N1 1 pc/pk

P

Industry Code

P Biopharmaceutical



Viruclear™ RC Rigid Plastic Cassette

V

Application

V Virus filtration

2

Encapsulant

2 Rigid plastic

R C

Membrane Material

RC Regenerated Cellulose

R

Regular

R Regular

1

Support type

1 Support type

Disposable Deflector

D Integrated
N Non-integrated

Membrane Cassette Code

A1 Pilot Component 1
Filtration Area 0.015m²
A2 Pilot Component 2
Filtration Area 0.08m²
B1 Scale-up component 1
Filtration Area 0.3m²
B2 Scale-up component 2
Filtration Area 0.5m²
B3 Scale-up component 3
Filtration Area 1.5m²

S

Sterile package (Purity Water)

S Sterile package (Purity Water)

P

Industry Code

P Biopharmaceutical



Note: The Pilot Component 1 is not available as an integrated cassette.

Viruclear™ RC H Syringe Filter

V F

Application

VF Virus filtration

H

R C

Membrane Material

RC Regenerated cellulose

Membrane Cassette Code

DS Syringe Filter
Filtration area 2.5cm²

Package

N9 9 pcs/pk
N1 1 pc/pk

P

Industry Code

P Biopharmaceutical



Ordering Information

Viruclear™ RC H Silicone Cassette

V F

Application

VF Virus filtration

H

Membrane Material

RC Regenerated cellulose

R C

Disposable Deflector

N Non-integrated

Membrane Cassette Code

- A1** Pilot Component 1
Filtration Area 0.015m²
- A2** Pilot Component 2
Filtration Area 0.08m²
- B1** Scale-up component 1
Filtration Area 0.3m²
- B2** Scale-up component 2
Filtration Area 0.5m²
- B3** Scale-up component 3
Filtration Area 1.5m²

Package

N1 1 pc/pk

P

Industry Code

P Biopharmaceutical



Viruclear™ RC H Rigid Plastic Cassette

V

Application

V Virus filtration

2

Encapsulant

2 Rigid plastic

R C

Membrane Material

RC Regenerated Cellulose

H

High capacity

1

Support type

Disposable Deflector

D Integrated
N Non-integrated

Membrane Cassette Code

- A1** Pilot Component 1
Filtration Area 0.015m²
- A2** Pilot Component 2
Filtration Area 0.08m²
- B1** Scale-up component 1
Filtration Area 0.3m²
- B2** Scale-up component 2
Filtration Area 0.5m²
- B3** Scale-up component 3
Filtration Area 1.5m²

S

Sterile package (Purity Water)

P

Industry Code

P Biopharmaceutical



Note: The Pilot Component 1 is not available as an integrated cassette.



Please contact us for more information

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