

Viresolve® Pro-S Solution

Enhanced Throughput Performance for Challenging Fluid Streams

The Viresolve® Pro-S virus filtration solution is designed to address the evolving demands of antibody manufacturers looking for filtration solutions for increasingly complex molecules.

Comprising the high-performing Viresolve® Pro-S Device in conjunction with the Viresolve® Pro-S Shield or the Viresolve® Pro-S Shield H prefilters, this advanced virus filtration solution enhances processing of difficult-to-filter antibody molecules.

High concentrations, hydrophobicity, and a tendency for aggregation in these fluid streams make it challenging for traditional virus filters to deliver the throughput necessary for efficient operations. With a novel low protein binding chemistry that minimizes fouling and increases throughput, and no intentionally added PFAS, the Viresolve® Pro-S solution improves both performance and sustainability for antibody manufacturers.

This advanced virus filtration solution is designed to address the challenges of next-generation antibody development, while enabling seamless integration into existing processes.

Benefits

Viresolve® Pro-S Solution

- **Effective retention:** ≥ 4.0 logs removal of parvovirus
- **Limited fouling and higher throughput:**
Low protein binding membrane reduces fouling, increasing throughput
- **Consistent performance:** Steady flux and reliable throughput, even for hydrophobic molecules
- **Improved efficiency:** Higher flux for faster processing
- **Ready-to-use:** Gamma-irradiated



Filter Formats

- Viresolve® Pro-S Device Micro 40 format
- Viresolve® Pro-S Shield Micro 40 format
- Viresolve® Pro-S Shield H Micro 40 format

Micro 40 formats (3.4 cm²) are a convenient option for process development and clearance evaluations.

Prefilters: Viresolve® Pro-S Shield & Viresolve® Pro-S Shield H

Adsorptive membrane prefilters to remove fouling protein aggregates

- Enhance throughput on Viresolve® Pro-S Device
- Effective across broad range of pH and conductivity conditions

Higher Throughput Reduces Filtration Areas

The low protein binding chemistry of Viresolve® Pro-S Device minimizes fouling and increases throughput of high concentration, hydrophobic or aggregation-prone molecules. As shown in **Figure 1**, the Viresolve® Pro-S Solution improves throughput of these molecules resulting in more than 75% of the fluids reaching more than 500 L/m². This higher throughput means less filtration area and lower costs.

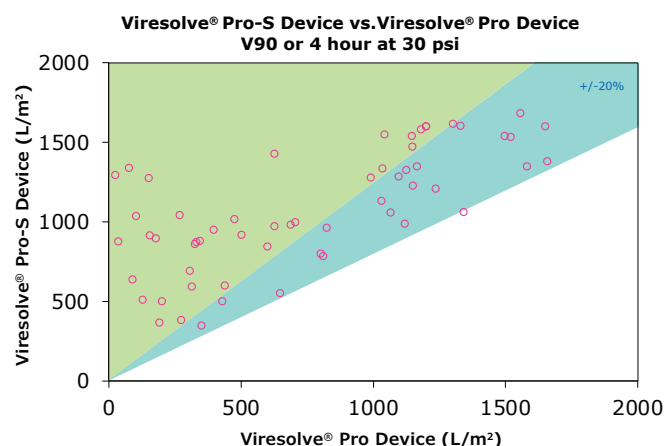


Figure 1. Relative throughput performance of a panel of complex molecules (5–25 g/L) on Viresolve® Pro Device and Viresolve® Pro-S Device. Points in the green shaded area show higher throughput with the Viresolve® Pro-S Device, those in blue show equivalent performance with both virus filters. Most trials included adsorptive prefilters. Molecules with filter capacity less than 200 L/m² not shown as additional optimization is recommended.

Nominal Dimensions and Weights

Viresolve® Pro-S Device, Viresolve® Pro-S Shield, Viresolve® Pro-S Shield H Prefilters

Size	Nominal Dimensions	Nominal Effective Filtration Area	Nominal Weight
Viresolve® Pro-S Device Micro 40	Height: 4.14 cm (1.63 in.) Diameter: 4.37 cm (1.72 in.)	3.4 cm ²	Dry weight: 9.97 g
Viresolve® Pro-S Shield Micro 40	Height: 4.14 cm (1.63 in.) Diameter: 4.37 cm (1.72 in.)	3.4 cm ²	Dry weight: 10.03 g
Viresolve® Pro-S Shield H Micro 40	Height: 4.14 cm (1.63 in.) Diameter: 4.37 cm (1.72 in.)	3.4 cm ²	Dry weight: 10.03 g

Virus Filter: Viresolve® Pro-S Device

Provides enhanced throughput and effective viral clearance for difficult-to-filter mAbs

- Low protein binding membrane reduces fouling and increases throughput
- ≥4.0 logs Minute Virus of Mice clearance
- ≥6.0 logs Murine Leukemia Virus clearance

Effective Retention

Made with the same reliable polyethersulfone base membrane as our trusted Viresolve® Pro Device, and featuring an innovative low protein binding chemistry, the Viresolve® Pro-S Device delivers effective parvovirus retention across a broad range of operating conditions.

In the study below, no virus was detected downstream, even after a process pause, resulting in more than 5 logs of parvovirus retention.

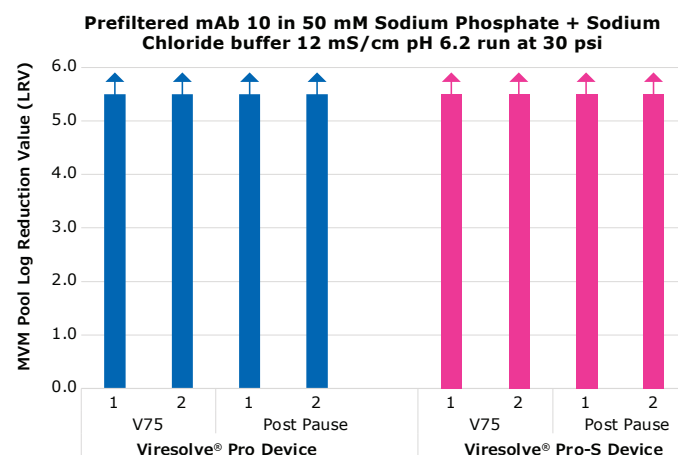


Figure 2. Minute Virus of Mice (MVM) retention performance of mAb 10 on replicate Viresolve® Pro Devices and Viresolve® Pro-S Devices at 75% flow decay before and after process pause of 15 mins.

Materials of Construction

Viresolve® Pro-S Devices, Viresolve® Pro-S Shield, Viresolve® Pro-S Shield H Prefilters

Size	Membrane	Components	Connections
Viresolve® Pro-S Device Micro 40	Polyethersulfone (PES)	Methyl methacrylate Acrylonitrile Butadiene Styrene (MABS)	Inlet and Vent: Female Luer Lock. Outlet: Male Luer slip
Viresolve® Pro-S Shield Micro 40	PES	MABS	Inlet and Vent: Female Luer Lock. Outlet: Male Luer slip
Viresolve® Pro-S Shield H Micro 40	PES	MABS	Inlet and Vent: Female Luer Lock. Outlet: Male Luer slip

Specifications

Viresolve® Pro-S Devices, Viresolve® Pro-S Shield, Viresolve® Pro-S Shield H Prefilters

ISO 9001 Quality Standard	This product was manufactured in a facility whose Quality Management System is approved by an accredited registering body to the appropriate ISO 9001 Quality Systems Standard.
Particulate and Bioburden	These products are manufactured in an ISO Class 8 (Per ISO 14644-1) controlled environment for particulate classification only
Animal Origin	Based on the current information from our suppliers, all component materials used in the manufacture of this device are either animal-free or in compliance with EMA/410/01.
Toxicity	Component materials meet the ISO 10993-5 acceptance criteria for MEM Elution Cytotoxicity after gamma irradiation at >40 kGy
Bacterial Endotoxin	Sample aqueous extraction contains less than 0.25 EU/mL as determined by the Limulus Amebocyte Lysate (LAL) test.
Membrane Bacteriophage Retention	Samples of the Viresolve® Pro-S Device membrane exhibited equal to or greater than 4.0 LRV retention of ΦX174 bacteriophage in the presence of a model protein at a minimum challenge of 10 ⁷ pfu/mL after >40 kGy gamma irradiation.
Device Bacteriophage Retention	Samples of the Viresolve® Pro-S Device filters exhibited equal to or greater than 4.0 LRV retention of ΦX174 bacteriophage in the presence of a model protein at a minimum challenge of 10 ⁷ pfu/mL after >40 kGy gamma irradiation.
Non-Fiber Releasing	This product was manufactured with materials that meet the criteria for a "non-fiber releasing" filter as defined in 21 CFR 210.3 (b) (6).

Ordering information

Description	Primary Use	Qty/Pk	Cat. No.
Viresolve® Pro-S Device Micro 40 kit	Process Development or Viral Clearance Evaluations	9	VPSDVALNB9
Viresolve® Pro-S Shield Micro 40 kit	Process Development or Viral Clearance Evaluations	9	VPISKITNB9
Viresolve® Pro-S Shield H Micro 40 kit	Process Development or Viral Clearance Evaluations	9	VPIHKITNB9

Partner With the Leader in Viral Safety

Virus Filtration Process Development Service

Optimizing a virus filtration step can be complex, but we're here to help. Our process development scientists will work side-by-side with you to help develop a robust, consistent, and cost-effective operation.

Viral Clearance Services

Viral clearance studies are a critical component of process validation and our partners at BioReliance® Services offer options to meet your needs at facilities in Singapore, China, the U.S., and the UK. These experts can support your early and late studies in accordance to regulatory guidelines, accelerate your time to results and minimize risk as you bring your product to market.



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