



■ Filtration Devices

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Syringe filters are used for many routine preparation steps in laboratories all over the world. They are convenient, ready-to-use disposables for sterile filtration of liquids and removal of particles from solutions and gases. Depending on the reagents filtered, syringe filters have to fulfill certain requirements to best serve customer's application. Sartorius offers Minisart® syringe filters and filters optimized for a wide range of relatively large volumes. The filters are clean and safe as they are virtually free of leachables and extractables and reliably remove particles and microorganisms with no leakage. If you need to rely on the quality of your filtrate – whether it needs to be sterile prior to injection or particulate-free before analysis – field-proven, high-quality Sartorius filter syringes are the No. 1 choice for reliable, convenient preparation steps.

Our Product Range

Minisart® syringe filters feature a housing made of medical-grade acrylic (MBS), which makes them the perfect choice for sterile filtration and clarification of additives, buffers, reagents, drugs and gases. Their effective filtration area of 6.2 cm² for liquids is the largest among premium syringe filters. The combination of the MBS housing material and surfactant-free cellulose acetate, PES or PTFE membranes add comma provides the lowest non-specific binding. As a result, Minisart® delivers excellent performance in filtering medical drugs or gases for sterilization or particle removal prior to use.

Minisart® syringe filters with a polypropylene housing are optimized for filtration prior to analysis and withstand even harsh solvents and chemicals. Due to the typical range of volumes from less than 1 mL to 100 mL, these filters are available in three different diameters with an effective filtration area of 0.07 cm², 1.7 cm² and 4.8 cm² for the optimum filter capacity and the lowest hold-up volume.

NEW!

Sartorius has developed a new, easy-to-use and straightforward filtration setup. The manually operated Claristep® Filtration System consisting of a station and filter units offers a novel way for clarifying your samples prior to analysis.

Claristep® Filter units are processed without syringe and are made of the purest materials. Another major benefit is that the contact time of the samples with the filters and the caps is extremely short, ensuring optimal, contamination-free results. The Claristep® Station consists of a base, a lid and an exchangeable tray for easy and accurate positioning of sample vials and Claristep® Filter units.

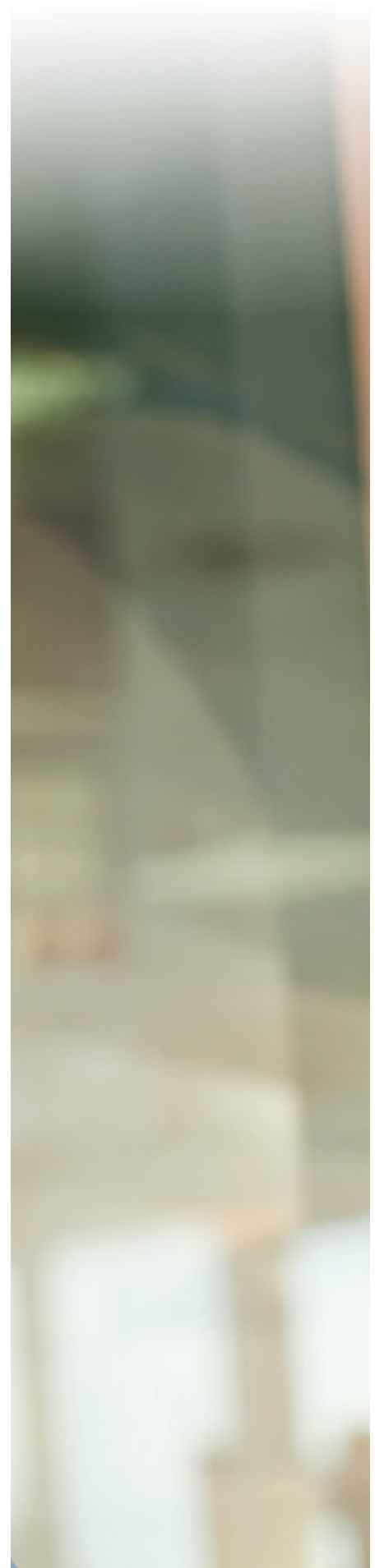
Claristep® syringeless filter units with RC membranes are optimized for solvents and aqueous solutions. They provide maximum chemical compatibility and exceptionally low non-specific binding of analytes.

Sartolab® vacuum filtration devices with 0.1 µm and 0.22 µm PES membranes for convenient filtration of 150 mL up to 1 L are ready to use and sterile. Sartolab® RF is a complete system that includes a receiver flask. Sartolab® BT Sterile is a bottle top filter without a receiver flasks. This enables customers to use a receiver bottle of their choice and to even expand filtration capacity, depending on the particle load of the filtered liquid by filling more than one receiver flask. Sartolab® 150V is a disposable vacuum filter with a pleated 0.22 µm PES membrane, which is suitable for up to 15 L of liquid.

Sartolab® pressure filtration devices with a 0.2 µm SFCA or PES membrane are available with or without a glass fiber prefilter, depending on your needs. Sartolab P20 is designed for up to 3 L volumes and can also be used in-line. The polycarbonate housing and membrane components are ideal for filtering liquid medical drugs. The glass fiber prefilter types are ideal for filtering environmental samples that have a high particle load prior to analyzing such samples.

Typical Applications for Filtration Devices

- Sterile filtration of liquids and gases with virtually no effect on the ingredients
- Particle removal from liquids and gases prior to downstream processes
- Venting of vials, bottles, containers, bags and bioreactors and fermenters
- Removal of precipitates and coagulates from medical solutions prior to use



■ Minisart® Syringe Filters

Removal of Particles and Microorganisms from Liquids and Gases

Sartorius offers Minisart® syringe filters for a wide range of applications. The filters are clean and safe as they are virtually free of leachables and extractables. In addition, they reliably remove particles and microorganisms – without any leakage. Minisart® with a polypropylene housing is optimized for filtration prior to analysis and withstands even harsh solvents and chemicals. Minisart® with a housing made of medical-grade acrylic (MBS) is the perfect choice for sterile filtration and clarification of additives, buffers, reagents, drugs and gases.

■ A Full Range of Filters Dedicated for Various Filtration Applications



Sample Preparation HPLC | UHPLC | Analytics

Elimination of particles from your samples prior to HPLC or other chromatographic analysis is essential in order to maintain the integrity of your chromatography column and to maximize its operating lifetime. Minisart® syringe filters optimized for sample preparation consist of a

polypropylene housing and membrane components featuring maximum chemical compatibility and minimum extractables to ensure excellent results. Due to the typical range of volumes from less than 1 mL to 100 mL, these filters are available in three different diameters with an effective filtration area of 0.07 cm², 1.7 cm² and 4.8 cm². For a selection guide, please see page 73.



Filtration of Aqueous Liquids Clarification | Sterile Filtration

For clarification and sterilization of liquids, filtration is the optimal method. It removes all microorganisms and particles reliably, without any effects on the ingredients due to adsorption or decomposition. For optimal results, Minisart® syringe filters with an MBS housing provide a choice of

membranes with pore sizes ranging from 0.1 µm to 5 µm for high flow rates and the lowest adsorption characteristics. The effective filtration area of 6.2 cm² for the fastest filtration is the largest among premium syringe filters available, and the MBS housing is color-coded for easy pore size identification. For a list of the types offered, please see page 77.



Medical Use and Special Sterile Venting Applications

Minisart® syringe filters are ideal for clarification of liquids laden with particles, e.g. for preparation of pharmaceuticals or infusion solutions. For sterilization and removal of particles from air and other gases, syringe filters are optimal for





sterile venting of containers, bioreactors, fermenters and tubing systems in medical devices. Many Minisart® syringe filters have the CE mark of conformity (European directive) and are available with a wide choice of membranes, connectors and housing materials. For a list of the types offered, please see page 80.

Minisart® Selection Guide

Please refer to Minisart® RC, NY or SRP for the highest chemical compatibility on page 75.
 Please refer to Minisart® NML or Minisart® High Flow on page 78.
 Several additional Minisart® units for venting and special purposes are shown on page 82.

Sample Composition	Aqueous		Aqueous Solvents		
	All Aqueous Solutions Buffers, Protein Analysis	All Aqueous Solutions Tissue Culture Media	Aqueous Solvent Mixtures Solvents	Solvent Mixtures Solvents	Solvents Gases Acids Bases
	SFCA Surfactant-Free Cellulose Acetate	PES Polyethersulfone	RC Regenerated Cellulose	NY Polyamide, Nylon	PTFE Polytetrafluoroethylene
	Hydrophilic				Hydrophobic

Pore Sizes	Sterilization		Sample Preparation Clarification Particle Removal					Prefiltration
	Small Bacteria Mycoplasma Colloids >0.1	UHPLC, etc. (Columns < 3 µm Particles) Bacteria	HPLC, etc. (Columns > 3 µm Particles) Particles	Particles Yeast Cells	Particles Yeast Cells	Particles Yeast Cells Platelets	Large Particles Grit, Cells	Glass Prefilter Glass+Membrane Highly Particle-laden Samples
	0.1 µm	0.2 µm	0.45 µm	0.65 µm	0.8 µm	1.2 µm	5 µm	GF (Glass Fiber)

Sample Volumes				
	1 mL to 200 mL	1 mL to 100 mL	0.5 mL to 15 mL	0.05 mL to 1 mL
	28 mm for up to 200 mL	25 mm for up to 100 mL	15 mm for up to 15 mL	4 mm for up to 1 mL

4 mm packages are color-coded

Male Spike Outlet

Male Luer Slip Outlet

Minisart® RC 15 mm

Minisart® NY 15 mm

Minisart® SRP 15 mm

Minisart® RC 25 mm

Minisart® NY 25 mm

Minisart® SRP 25 mm

Sample Preparation for Analytical Procedures

Reliable Removal of Particles and Microorganisms from Liquids and Gases

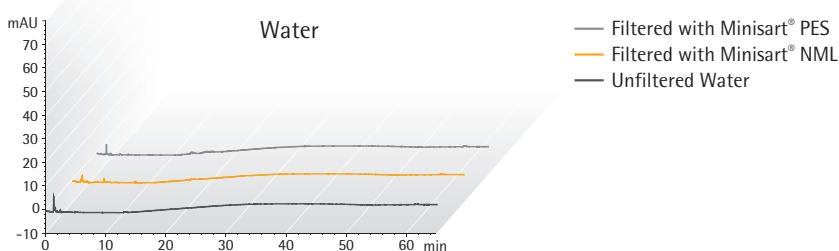
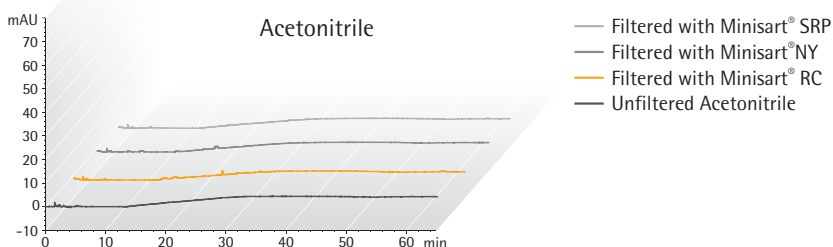
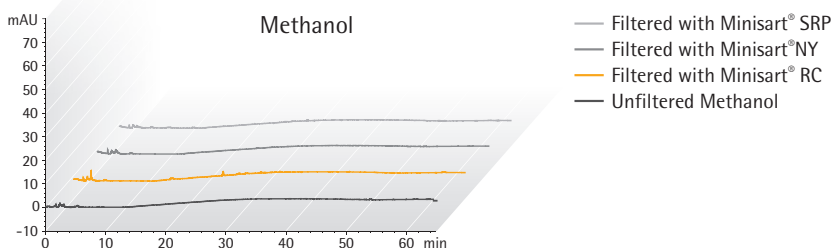
Particle removal by filtration before analysis substantially increases the lifetime of your columns. Minisart® RC is optimized for aqueous liquids and solvents and is compatible with DMSO, other amides, ketones, esters and ethers. Minisart® NY is exceptionally pure compared with other common polyamide (nylon) filters and competitor products. For this product raw materials are used which do not interfere with standard analytical methods.

Our coating-free hydrophobic PTFE membrane used in Minisart® SRP is suitable for venting applications and leachables-free clarification of exceptionally harsh chemicals.

Minisart® Features

- Low adsorption of analytes
- Maximum chemical compatibility
- Minimum extractables or leachables
- Bidirectional use possible
- 100% optical integrity test

HPLC Certification



HPLC Procedure

Column C18: 250 × 4.6 mm, Flow Rate: 1 mL/min, Wavelength: 220 nm

HPLC Injection Volume: 20 µL, Analysis Time: 65 min, Temperature: 40°C, Mobile Phases:

A) Acetonitrile | B) Water, Gradient: Hold 60% A for 10 min, 60% to 95% A in 20 min, 95% to 100% A in 35 min

Sample Preparation for Chromatography

□ Ordering Information

Dia. in mm | EFA¹ Membrane Housing Pore Size Connector Outlet Color | Printing Sterile* Qty./Pkg. Order No.

Minisart® RC (Regenerated Cellulose)

25 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17764-----ACK
25 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	17764-----K
25 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	No	200	17764-----S
25 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	17764-----Q
25 mm	RC	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	17765-----K
25 mm	RC	PP	0.45 µm	Male Luer Slip	White, Printed	No	200	17765-----S
25 mm	RC	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	17765-----Q
15 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17761-----ACK
15 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	17761-----K
15 mm	RC	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	17761-----Q
15 mm	RC	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	17762-----K
15 mm	RC	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	17762-----Q
4 mm	RC	PP	0.2 µm	Male Luer Slip	Blue Tray	No	50	17821-----K
4 mm	RC	PP	0.2 µm	Male Luer Slip	Blue Tray	No	500	17821-----Q
4 mm	RC	PP	0.45 µm	Male Luer Slip	Yellow Tray	No	50	17822-----K
4 mm	RC	PP	0.45 µm	Male Luer Slip	Yellow Tray	No	500	17822-----Q

Minisart® SRP (Hydrophobic PTFE)

25 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17575-----ACK
25 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	17575-----K
25 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	No	200	17575-----S
25 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	17575-----Q
25 mm	PTFE	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	17576-----K
25 mm	PTFE	PP	0.45 µm	Male Luer Slip	White, Printed	No	200	17576-----S
25 mm	PTFE	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	17576-----Q
15 mm	PTFE	PP	0.2 µm	Male Spike	White, Printed	No	50	17558-----K
15 mm	PTFE	PP	0.2 µm	Male Spike	White, Printed	No	500	17558-----Q
15 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17573-----ACK
15 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	17573-----K
15 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	17573-----Q
15 mm	PTFE	PP	0.45 µm	Male Spike	White, Printed	No	50	17559-----K
15 mm	PTFE	PP	0.45 µm	Male Spike	White, Printed	No	500	17559-----Q
15 mm	PTFE	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	17574-----K
15 mm	PTFE	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	17574-----Q
4 mm	PTFE	PP	0.2 µm	Male Luer Slip	Blue Tray	No	500	17844-----Q
4 mm	PTFE	PP	0.45 µm	Male Luer Slip	Yellow Tray	No	50	17820-----K
4 mm	PTFE	PP	0.45 µm	Male Luer Slip	Yellow Tray	No	500	17820-----Q

Dia. in mm | EFA¹ Membrane Housing Pore Size Connector Outlet Color | Printing Sterile* Qty./Pkg. Order No.

Minisart® NY (Nylon) and NY25 Plus (Glass Fiber 0.7 µm² + Nylon)

25 mm	Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17845-----ACK
25 mm	Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	17845-----Q
25 mm	Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	Yes	50	17846-----ACK
25 mm	Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	17846-----Q
15 mm	Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	1776B-----K
15 mm	Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	1776B-----Q
15 mm	Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	1776C-----K
15 mm	Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	1776C-----Q
25 mm	GF+Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	No	50	1784B-----K
25 mm	GF+Nylon	PP	0.2 µm	Male Luer Slip	White, Printed	No	500	1784B-----Q
25 mm	GF+Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	No	50	1784C-----K
25 mm	GF+Nylon	PP	0.45 µm	Male Luer Slip	White, Printed	No	500	1784C-----Q

* Sterile Minisart® syringe filters are individually packaged. If not stated otherwise, Minisart® units have been sterilized by ethylene oxide.

Non-sterilized Minisart® units: RC, PTFE and nylon can be sterilized by autoclaving at 121°C for 30 min/or by using ethylene oxide (EO).

¹ Diameter of EFA – Effective Filtration Area

² 0.7 µm = GF particle retention ≠ pore size!

For technical product specifications, please see page 84.



0.1
0.45
0.22

Minisart® High Flow with PES



5.0
1.2
0.8
0.65
0.45
0.2

Minisart® NML with SFCA

Filtration of Aqueous Liquids – Clarification | Sterilization

Filtration Is the Optimal Method for Clarification and Sterilization of Liquids

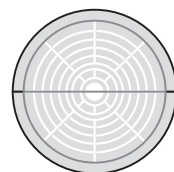
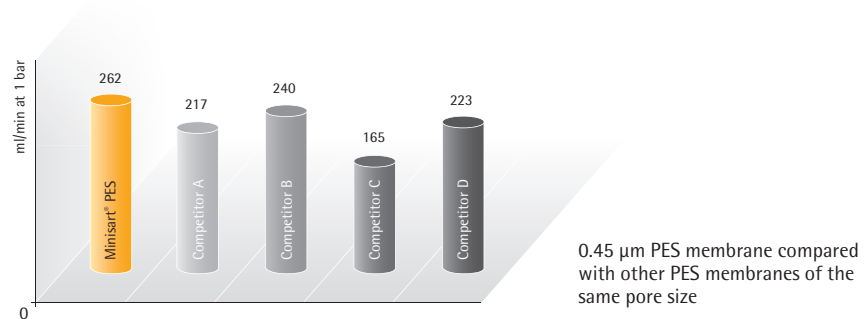
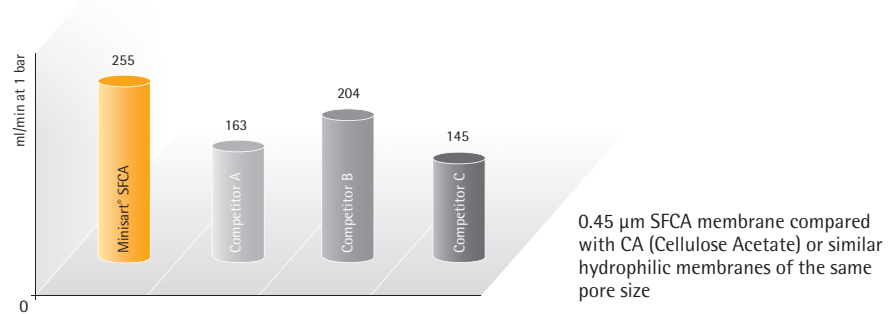
Sterilization by filtration is the fastest method for removal of bacterial cells from liquids, while minimizing the effects on ingredients. Minisart® NML with surfactant-free cellulose acetate (SFCA) is the best choice for all aqueous solutions with a pH of 4 to 8. It combines fast flow rates with an exceptionally pure and leachables-free membrane and is available in many different pore sizes – also for the removal of larger particles. Minisart® High Flow with polyethersulfone (PES) is optimal for delivering the highest flow rates and for a broad pH compatibility range from 1 to 13. Due to the asymmetric membrane structure, the PES surface virtually behaves like a prefilter. Both Minisart® types – NML and High Flow – can be sterilized by

ethylene oxide (EO) or gamma irradiation and are suitable for gluing and assembling on tubing. In addition, Minisart® NML has the CE mark of conformity.

Minisart® Features

- The largest effective filtration area (EFA) of 6.2 cm²
- The lowest adsorption
- Superior flow rate
- High total throughput
- Low hold-up volume
- Minimum extractables
- PVC-free
- Gamma-irradiated or EO-sterilized
- Bidirectional use possible
- 100% optical integrity test

Water Flow Rates at 1 bar (mL/min); 15.4 psi; 0.45 µm Hydrophilic Membranes



28 mm EFA
33 mm housing diameter

Preparation of Aqueous Liquids

□ Ordering Information

Dia. in mm EFA ¹	Membrane	Housing	Pore Size	Connector Outlet	Color Printing	Sterile*	Qty./ Pkg.	Order No.	CE Marking
Minisart® High Flow (PES – Polyethersulfone)									
28 mm	PES	MBS	0.1 µm	Male Luer Lock	Dark Red	Yes	50	16553-----K	
28 mm	PES	MBS	0.22 µm	Male Luer Lock	Royal Blue	Yes#	50	16532-----GUK	
28 mm	PES	MBS	0.22 µm	Male Luer Lock	Royal Blue	Yes	50	16532-----K	
28 mm	PES	MBS	0.22 µm	Male Luer Slip	Royal Blue	Yes	50	16541-----K	
28 mm	PES	MBS	0.22 µm	Male Luer Lock	Royal Blue	No	500	16532-----Q	
28 mm	PES	MBS	0.22 µm	Male Luer Slip	Royal Blue	No	500	16541-----Q	
28 mm	PES	MBS	0.45 µm	Male Luer Lock	Amber	Yes	50	16537-----K	
28 mm	PES	MBS	0.45 µm	Male Luer Lock	Amber	No	500	16537-----Q	
28 mm	PES	MBS	0.45 µm	Male Luer Slip	Amber	Yes#	50	16533-----GUK	
28 mm	PES	MBS	0.45 µm	Male Luer Slip	Amber	Yes	50	16533-----K	
28 mm	PES	MBS	0.45 µm	Male Luer Slip	Amber	No	500	16533-----Q	
Minisart® NML (SFCA – Surfactant-free Cellulose Acetate)									
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	Yes	50	16534-----K	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	Yes#	50	16534-----GUK	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	No	500	16534-----Q	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Slip	Blue	Yes	50	17597-----K	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Slip	Blue	No	500	17597-----Q	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	Yes	50	16555-----K	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	Yes#	50	16555-----GUK	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	No	500	16555-----Q	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Slip	Yellow	Yes	50	17598-----K	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Slip	Yellow	No	500	17598-----Q	CE-marked
28 mm	SFCA	MBS	0.65 µm	Male Luer Slip	Pink	Yes	50	16569-----K	
28 mm	SFCA	MBS	0.8 µm	Male Luer Lock	Green	Yes	50	16592-----K	
28 mm	SFCA	MBS	0.8 µm	Male Luer Lock	Green	Yes#	50	16592-----GUK	
28 mm	SFCA	MBS	0.8 µm	Male Luer Lock	Green	No	500	16592-----Q	
28 mm	SFCA	MBS	1.2 µm	Male Luer Lock	Red	Yes	50	17593-----K	
28 mm	SFCA	MBS	1.2 µm	Male Luer Lock	Red	No	500	17593-----Q	
28 mm	SFCA	MBS	5 µm	Male Luer Lock	Brown	Yes	50	17594-----K	CE-marked
28 mm	SFCA	MBS	5 µm	Male Luer Lock	Brown	No	500	17594-----Q	

Dia. in mm EFA ¹	Membrane	Housing	Pore Size	Connector Outlet	Color Printing	Sterile*	Qty./ Pkg.	Order No.	CE Marking
Minisart® NML Plus (Glass Fiber 0.7 µm² + SFCA)									
28 mm	GF+SFCA	MBS	0.2 µm	Male Luer Lock	Blue	Yes	50	17823-----K	
28 mm	GF+SFCA	MBS	0.2 µm	Male Luer Lock	Blue	No	500	17823-----Q	
28 mm	GF+SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	Yes	50	17829-----K	
28 mm	GF+SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	No	500	17829-----Q	
28 mm	GF+SFCA	MBS	1.2 µm	Male Luer Lock	Red	No	500	17825-----Q	
28 mm	GF	MBS	0.7 µm ²	Male Luer Lock	White	No	50	17824-----K	
28 mm	GF	MBS	0.7 µm ²	Male Luer Lock	White	No	500	17824-----Q	

* Sterilized Minisart® units are individually packaged. If not stated otherwise, Minisart® are sterilized by ethylene oxide.

#-Mark indicates sterilization by gamma irradiation.

Non-sterilized Minisart® units: PES, SFCA, GF+SFCA and GF can be sterilized by ethylene oxide or gamma irradiation.

¹ Diameter of EFA – Effective Filtration Area

² 0.7 µm = GF particle retention ≠ pore size!

For technical product specifications, please see page 86.





Minisart® available in many configurations

Special Applications – Medical Uses and Sterile Venting

Choose from a Broad Range of Pore Sizes, Materials and Formats

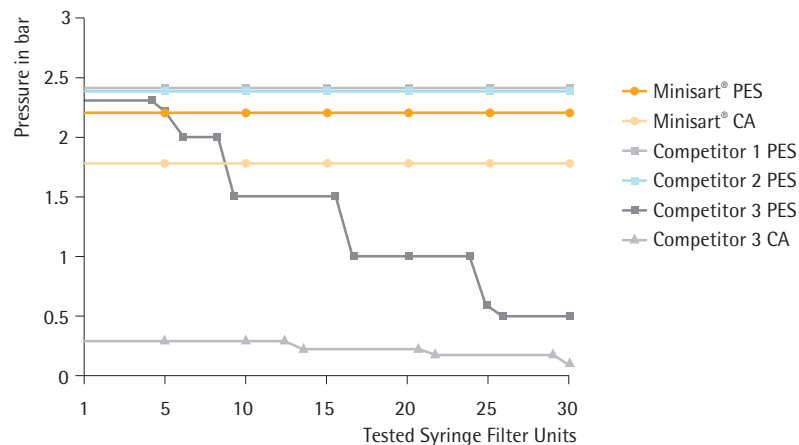
Bacterial cell removal or particulate removal from liquids, including medical drugs, can easily be performed with Minisart® syringe filters. Minisart® has a minimal effect on the ingredients of a filtered solution. Minisart® NML and Ophthalsart with surfactant-free cellulose acetate (SFCA) and Minisart® HY and SRP with hydrophobic PTFE have the CE mark of conformity and are frequently used for sterile filtration of aqueous and oily ear or eye solutions and other drugs. Minisart® NML with a 5 µm pore size removes particulates or coagulates in dissolved medical drugs prior to injection, offering the highest total throughput under sterile conditions – without any early

clogging. Hydrophobic PTFE filters are suitable for venting purposes and are additionally available in special formats with activated carbon.

Minisart® Features

- 100% optical integrity test
- Low adsorption
- Minimum extractables
- Particulate-free
- PVC-free
- Gamma-irradiated or EO-sterilized
- Many CE-marked types
- Bidirectional use possible
- Many configurations available

Pressure-Hold Test



Method: Pressure-hold tests were performed by connecting pre-wetted syringe filter units to a 10-fold pressure device with a pressure gauge. The pressure applied equaled 4/5 of the bubble point. Units failed the test if they released air bubbles before reaching 4/5 of the minimum bubble point. These units were remeasured to determine at which pressure air bubbles appear.

Result: Testing the pressure-hold capability of syringe filters revealed that many competitor 3's filters are dysfunctional and not intact. Filtration performed with such filters will result in unsterile filtrates or filtrates without an appropriately reduced level of particles.



Biocompatibility Certificate Minisart® HY



Biocompatibility Certificate Minisart® NML



Declaration of Conformity Minisart®

Minisart® Syringe Filters – Special

□ Ordering Information

Dia. in mm EFA ¹	Membrane	Housing	Pore Size	Connector Outlet	Color Printing	Sterile*	Qty./ Pkg.	Order No.	CE Marking
Minisart® NML (SFCA – Cellulose Acetate) Aqueous Filtration									
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	Yes	50	16534-----K	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	Yes#	50	16534-----GUK	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Lock	Blue	No	500	16534-----Q	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Slip	Blue	Yes	50	17597-----K	CE-marked
28 mm	SFCA	MBS	0.2 µm	Male Luer Slip	Blue	No	500	17597-----Q	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	Yes	50	16555-----K	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	Yes#	50	16555-----GUK	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Lock	Yellow	No	500	16555-----Q	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Slip	Yellow	Yes	50	17598-----K	CE-marked
28 mm	SFCA	MBS	0.45 µm	Male Luer Slip	Yellow	No	500	17598-----Q	CE-marked
28 mm	SFCA	MBS	5 µm	Male Luer Lock	Brown	Yes	50	17594-----K	CE-marked
Minisart® Ophthalmart (SFCA – Cellulose Acetate) Aqueous Filtration									
28 mm	Ophthalmart	MBS	0.2 µm	Male Luer Slip	Pink	Yes	50	17528-----K	CE-marked
Minisart® High Flow (PES – Polyethersulfone) Aqueous Filtration									
28 mm	PES	MBS	0.1 µm	Male Luer Lock	Dark Red	Yes	50	16553-----K	
Minisart® PES (Polyethersulfone) Aqueous Filtration									
15 mm	PES	PP	0.22 µm	Male Luer Slip	White	Yes	50	1776D-----ACK	
15 mm	PES	PP	0.22 µm	Male Luer Slip	White	No	50	1776D-----Q	
Minisart® Air (Hydrophobic PTFE) Venting									
15 mm	PTFE	MBS	0.2 µm	Male Luer Slip	Yellow	No	500	1751A-----Q	
15 mm	PTFE	MBS	0.2 µm	Male Luer Slip + Needle	Yellow	Yes#	50	16596-----HNK	
Minisart® HY (hydrophobic PTFE), CE-Marked, for Venting and Gas Filtration									
26 mm	PTFE	MBS	0.2 µm	Male Luer Lock	Clear	Yes	50	16596-----HYK	CE-marked
26 mm	PTFE	MBS	0.2 µm	Male Luer Lock	Clear	No	500	16596-----HYQ	CE-marked
26 mm	PTFE	MBS	0.2 µm	Male Luer Lock ^a	Clear	No	500	16599-----HYQ	CE-marked
26 mm	PTFE	MBS	0.2 µm	Hose Barbs ^b	Clear	No	500	40078-----Q	CE-marked
26 mm	PTFE	MBS	1 µm	Male Luer Lock	Clear	No	500	1659A-----HYQ	
26 mm	PTFE	MBS	1 µm	Hose Barbs ^b	Clear	No	500	1659B-----HYQ	
Minisart® Acticosart with Dome Reservoir and Hydrophobic PTFE for Venting and Ultracleaning of Gases									
26 mm	Active Carbon	MBS	0.45 µm	Male Luer Slip ^a	Blue	No	500	17840-----Q	

Dia. in mm EFA ¹	Membrane	Housing	Pore Size	Connector Outlet	Color Printing	Sterile*	Qty./ Pkg.	Order No.	CE Marking
Minisart® SRP (Hydrophobic PTFE) CE-marked Venting & Gas Filtration									
25 mm	PTFE	PP	0.2 µm	Male Luer Slip	White, Printed	Yes	50	17575-----ACK	CE-marked
25 mm	PTFE	PP	0.2 µm	Hose Barb	White	No	500	1757A-----Q	

* Sterilized Minisart® units are individually packaged. If not stated otherwise, Minisarts are sterilized by ethylene oxide.
 #-mark indicates sterilization by gamma irradiation
 Non-presterilized Minisart® units: SFCA can be sterilized by ethylene oxide or gamma irradiation. PTFE can be sterilized by ethylene oxide.
^a Connector inlet: Male Luer slip (all other Minisart® types have female luer lock inlets)
^b Hose bars, inlet and outlet, 5 mm diameter
¹ Diameter of EFA – Effective Filtration Area

For technical product specifications, please see pages 84 and 86.

Do you need other quantities per package?
 Are you looking for special versions or do you have requirements?
 Do you need other inlet and | or outlet connectors?

Please contact us to learn more about additional Minisart® configurations that are available.



Minisart® with Polypropylene Housing

□ Specifications

Minisart® RC | SRP | NY | PES with 4 | 15 | 25 mm Diameter Membrane Filtration Area

Housing material	Polypropylene (PP)
Membranes	RC = Regenerated Cellulose NY = Polyamide SRP = Hydrophobic PTFE = Polytetrafluoroethylene PES = Polyethersulfone
Glass fiber prefilter	NY Plus: Ultrapure quartz, 0.7 µm particle retention
Application limits	Max. recommended operating pressure 4.5 bar 65 psi
Housing burst pressure	> 7 bar 102 psi
Max. temperature	121°C, 30 min (autoclavable)
Sterilization	Non-sterile Minisart® can be autoclaved or sterilized by ethylene oxide (EO)

Minisart® Membrane Types	RC 0.2 µm	RC 0.2 µm	RC 0.45 µm	SRP 0.2 µm	SRP 0.45 µm
Non-sterile packs: 50 (K), 200 (S), 500 (Q), 1000 (R) sterile packs: individual packaged, 50 (ACK)	K S Q R	ACK	K S Q R	K S Q ACK	K S Q
Bubble point (≥)	With water 3.0 bar 44 psi	With water 4.6 bar 67 psi	With water 2.0 bar 29 psi	With ethanol 1.1 bar 16 psi	With ethanol 0.9 bar 13 psi

Flow rate, 4 mm dia. = 0.07 cm² filter area | Hold-up volume¹: 5 µL to 10 µL (► mL/min)

- For water at 1 bar	0.5	-	1.5	- ³	- ³
- For methanol at 1 bar	1.5	-	3.0	2.0	4.5
- For air at 0.1 bar	- ²	-	- ²	30	60

Flow rate, 15 mm dia. = 1.7 cm² filter area | Hold-up volume¹: 30 µL to 100 µL (► mL/min)

- For water at 1 bar	20	10	40	- ³	- ³
- For methanol at 1 bar	55	25	105	55	150
- For air at 0.1 bar	- ²	- ²	- ²	800	1600

Flow rate, 25 mm dia. = 4.8 cm² filter area | Hold-up volume¹: 100 µL to 200 µL (► mL/min)

- For water at 1 bar	80	50	160	- ³	- ³
- For methanol at 1 bar	160	90	325	160	260
- For air at 0.1 bar	- ²	- ²	- ²	1800	3000

Water penetration point	-	-	-	> 4.0 bar 58 psi ³	> 3.0 bar 44 psi ³
Sterile filtration capability acc. to the bacteria challenge text	No ⁵	Yes	No	Yes	No
Pyrogen-free according to the USP				Yes	
Cytotoxicity (17575-ACK)	No inhibition with MRC-5 (human lung cells) and L929				

Minisart® Membrane Types	NY 0.2 µm	NY 0.45 µm	NY Plus 0.2 µm	NY Plus 0.45 µm	PES 0.2 µm
Non-sterile packs: 50 (K), 200 (S), 500 (Q), 1000 (R) sterile packs: individual packaged, 50 (ACK)	K Q R ACK	K Q R ACK	K Q	K Q	K Q ACK
Bubble point (≥)	With water 3.0 bar 44 psi	With water 2.0 bar 29 psi	With water 3.0 bar 44 psi	With water 2.0 bar 29 psi	With water 3.2 bar 46 psi
Flow rate, 4 mm dia. = 0.07 cm² filter area Hold-up volume¹: 5 µL to 10 µL (► mL/min)					
- For water at 1 bar	-	-	-	-	1.5
- For methanol at 1 bar	-	-	-	-	- ⁴
- For air at 0.1 bar	-	-	-	-	- ²
Flow rate, 15 mm dia. = 1.7 cm² filter area Hold-up volume¹: 30 µL to 100 µL (► mL/min)					
- For water at 1 bar	20	40	-	-	40
- For methanol at 1 bar	40	110	-	-	- ⁴
- For air at 0.1 bar	- ²	- ²	-	-	- ²
Flow rate, 25 mm dia. = 4.8 cm² filter area Hold-up volume¹: 100 µL to 200 µL (► mL/min)					
- For water at 1 bar	50	100	50	100	100
- For methanol at 1 bar	70	200	70	200	- ⁴
- For air at 0.1 bar	- ²	- ²	- ²	- ²	- ²
Water penetration point	-	-	-	-	-
Sterile filtration capability acc. to the bacteria challenge test	Yes	No	Yes	No	Yes
Pyrogen-free according to the USP					
Cytotoxicity (17575-ACK)	No inhibition with MRC-5 (human lung cells) and L929				

¹ Hold-up volume after air purge

² Hydrophilic membranes can filter dry air or gas but become impermeable to air or gas when wetted!

³ Hydrophobic membranes cannot be wetted with aqueous solutions unless you overcome their water penetration point or pre-wet them using an organic solvent (e.g. ethanol)

⁴ PES is suitable for solutions only containing up to 30% MeOH

⁵ According to the bacterial challenge test (BCT) with 10⁷ Brevundimonas diminuta. Non-sterile RC Minisart® types are optimized for sample preparation and are not suitable for sterile filtration according to the bacteria challenge test. All other non-sterile Minisart® types with 0.2 mm pore size can be sterilized by autoclaving or EO before use for sterile filtration.

Minisart® with MBS Housing

□ Specifications

Minisart® High Flow | NML | NML Plus with 28 mm accessible membrane filtration area diameter, 100 µL to 150 µL hold-up volume¹

Minisart® HY | Acticosart with 26 mm accessible membrane filtration area diameter, 100 µL to 150 µL hold-up volume¹

Minisart® Air with 15 mm accessible membrane filtration area diameter, 100 µL hold-up volume¹

Housing material	Methacrylate butadiene styrene (MBS)
Membranes	High Flow: PES = Polyethersulfone NML: (SF) CA = (Surfactant-free) Cellulose Acetate NML Plus: (SF) CA = (Surfactant-free) Cellulose Acetate HY Acticosart Air: Hydrophobic PTFE = Polytetrafluoroethylene
Glass fiber pre-filter	NML Plus: Binder-free GF, 0.7 µm particle retention
Application limits	High Flow: Max. recommended operating pressure 6.0 bar 87 psi NML, NML Plus, HY, Air: Max. recommended operating pressure 4.5 bar 65 psi Acticosart: Max. recommended operating pressure 1 bar 14.5 psi
Housing burst pressure	> 7 bar 102 psi (not determined for Acticosart)
Max. temperature	60°C, not autoclavable
Sterilization	Non-sterile Minisart® High Flow, NML and NML Plus can be or sterilized by ethylene oxide (EO) or by gamma sterilization Non-sterile Minisart® HY, Acticosart, Air* can be sterilized by ethylene oxide (EO)

Minisart® Membrane Types	PES 0.1 µm	PES 0.2 µm	PES 0.45 µm	CA 0.2 µm	CA 0.45 µm	CA 0.65 µm	CA 0.8 µm	CA 1.2 µm	CA 5.0 µm
Non-sterile packages: 500 (Q, HYQ), 1000 (R), sterile packs: individually packaged, 50 (K, GUK, HYK, HNK)	K	K GUK Q	K GUK Q	K GUK Q	K GUK Q	K	K GUK Q	K Q	K Q
Bubble point (≥)	With water 5.0 bar 73 psi	With water 3.2 bar 46 psi	With water 2.0 bar 29 psi	With water 3.2 bar 46 psi	With water 2.0 bar 29 psi	With water 1.3 bar 19 psi	With water 0.8 bar 12 psi	With water 0.7 bar 10 psi	With water 0.4 bar 6 psi
Flow Rate for^{2 3} (► mL/min)									
28 mm dia. for water at 1 bar	40	140	220	60	180	250	400	500	600
15 mm dia. for air at 0.1 bar	-	-	-	-	-	-	-	-	-
26 mm dia. for air at 0.1 bar	-	-	-	-	-	-	-	-	-
Water penetration point	-	-	-	-	-	-	-	-	-
Sterile filtration capability⁴ acc. to the bacteria challenge test	Yes	Yes	No	Yes	No	No	No	No	No
Pyrogen-free according to the USP				Yes	Yes				Yes
Cytotoxicity	No inhibition with MRC-5 (human lung cells) and L929								

Minisart® Membrane Type	GF + CA 0.2 µm	GF + CA 0.45 µm	GF + CA 1.2 µm	GF 0.7 µm	PTFE 0.2 µm	PTFE 1.0 µm	Acticosart	PTFE (Air) 0.2 µm
Non-sterile packages: 500 (Q, HYQ), 1000 (R), sterile packs: individually packaged, 50 (K, GUK, HYK, HNK)	K Q	K Q	Q	K Q	HYK HYQ Q	HYQ	Q	Q HNK
Bubble point (≥)	With water 3.2 bar 46 psi	With water 2.0 bar 29 psi	With water 0.7 bar 10 psi	With water 0.5 bar 7 psi	With ethanol 1.4 bar 20 psi	With ethanol 0.5 bar 7 psi	With ethanol 0.9 bar 13 psi	With ethanol 1.0 bar 14 psi
Flow rate for^{2 3} (► mL/min)								
28 mm dia. for water at 1 bar	60	160	350	450	-	-	-	-
15 mm dia. for air at 0.1 bar	-	-	-	-	-	-	-	800
26 mm dia. for air at 0.1 bar	-	-	-	-	2000	4000	2300	-
Water penetration point	-	-	-	-	> 4.0 bar 58 psi ³	> 1.5 bar 22 psi ³	N.a.	> 3.0 bar 44 psi ³
Sterile filtration capability⁴ according to the bacteria challenge test	Yes	No	No	No	Yes	No	N.a.	Yes
Pyrogen-free according to the USP	Yes							
Cytotoxicity	No inhibition with MRC-5 (human lung cells) and L929							

¹ Hold-up volume after air purge

² Hydrophilic membranes can filter dry air or gas but become impermeable to air or gas when wetted!

³ Hydrophobic membranes cannot be wetted with aqueous solutions unless you overcome their water penetration point.

⁴ According to bacterial challenge test (BCT) with 10⁷ *Brevundimonas diminuta*. All non-sterile Minisart® types listed above can be sterilized according to the method recommended in this table.

* Minisart® Air can be sterilized by gamma rays according to the following parameters: Range 25 – 40 kGy (validated with 50 kGy).

Claristep® Filtration System

The Power of Simplicity



The Claristep® Station consists of a base, a lid and an exchangeable tray for easy and accurate positioning of sample vials and Claristep® Filter units. The patent-pending design features unique grooves in the station's lid and matching guide ridges on Claristep® Filter units to enable intuitively correct alignment and convenient handling of the system.

Preparing samples by clarification is an essential step prior to nearly all analytical techniques, such as high pressure liquid chromatography (HPLC). This filtration step to eliminate particles is crucial for maintaining the integrity of chromatography columns and for maximizing their operating life time.

In addition, as the sensitivity of automated analytical instruments continues to improve, they increasingly require less volume to operate in order to maximize throughput. Therefore, fast clarification of small volumes that does not add leachables or extractables to the original sample is indispensable for achieving the best analytical results.

To meet these requirements, Sartorius has developed a new, easy-to-use and straightforward filtration setup. The manually operated Claristep® Filtration System consisting of a station and filter units offers a novel way for clarifying your samples prior to analysis.

- Up to 8 samples are processed simultaneously
- No syringe required
- No need for a vacuum source or a power supply
- For low sample volumes ranging from 60 µL to 600 µL
- Hold-up volume < 30 µL



The grooves automatically guide the filter unit caps into the correct positions for simultaneous and accurate cap closure.



Claristep® Filter units are made of the purest materials. Another major benefit is that the contact time of the samples with the filters and the caps is extremely short, ensuring optimal, contamination-free results. Filtered liquids are collected in any 12 × 32 mm outer diameter vials of your choice based on the analytical method to be performed.

■ Sample Preparation for Analytics

Use the Most Ergonomic Clarification Solution

Filter 8 samples simultaneously – without needing any power supply or a vacuum | pressure source. Simply place the filters on

your vials, gently close the station and press on the station lid to filter – that's it!



1. Close the station lid. The grooves align the caps automatically, securely sealing every single Claristep® Filter unit for the most convenient processing.



2. Apply slight uniform pressure with your hand to start sample clarification. You will feel a certain resistance while liquid is pressed through each membrane.



3. Press down on the station lid so that the left and right corners touch the base plate. Hold the lid in place for 3 seconds to ensure all sample liquid is filtered through.



Claristep® Filter units press liquid through each membrane by an air pocket that forms over each filter unit when the station lid is closed. This air pocket is released when you stop holding down the lid – you will feel it in your fingertips!



Before clarification, the samples are pipetted in the filter reservoir.



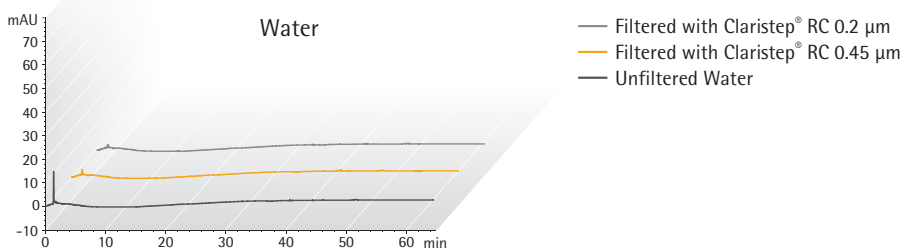
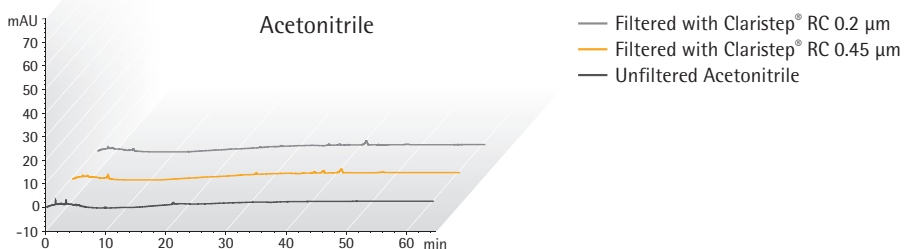
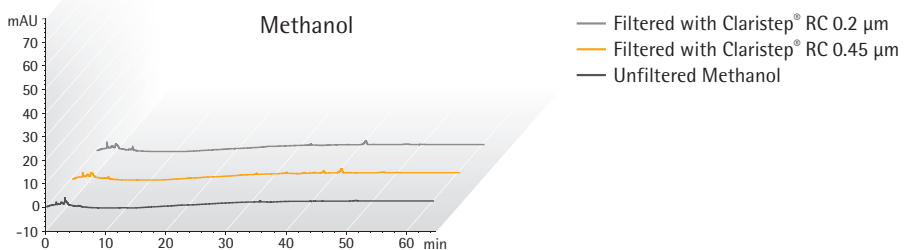
After clarification, the filtrates are collected in sample vials.

Reliable Removal of Particles

Filter Samples Without Adding Extractables and Leachables

Claristep® Filter units with RC membranes are optimized for solvents and aqueous solutions. They provide maximum chemical compatibility and exceptionally low non-specific binding of analytes.

HPLC Certification



HPLC Procedure

Column: C18: 5 µm × 250 mm × 4.0 mm, Flow Rate: 1 mL/min, Wavelength: 220 nm

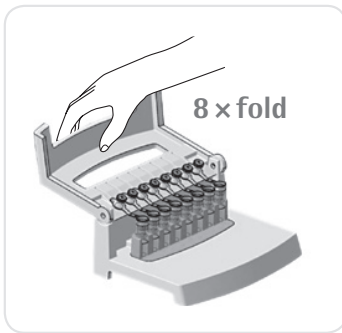
Injection Volume: 20 µL, Analysis Time: 65 min, Temperature: 40°C, Mobile Phases:
A) Acetonitrile | B) Water, Gradient: Hold 60% A for 10 min, 60% to 100% A in 20 min,
100% A for 30 min

Sample Preparation Techniques

Choose the Best Solution for Your Needs

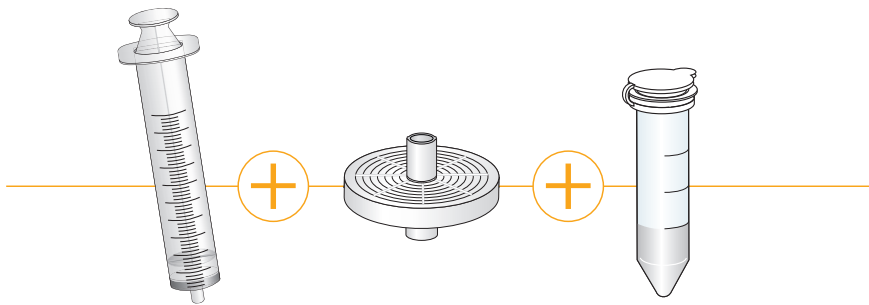
Do you process dozens of samples each day? A syringeless solution will help you reduce time, effort and waste – and minimize hand stress. If you need to analyze only a few samples a day, you will benefit from our proven combination of a syringe and syringe filter. The choice is all yours!

Claristep®
Filtration System



or

Syringe Filters
for processing one sample at a time

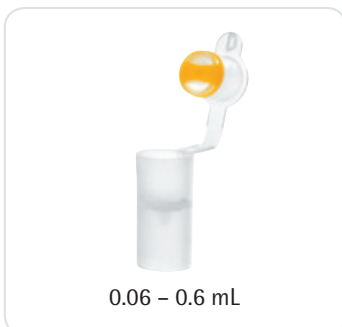


Analytical Sample Volumes Run Small

Get the Particle-free Volume You Really Need

If you need to fill only 12 × 32 mm vials, a syringeless solution will help you save time and reduce sample loss!

Syringeless Solution



or

Different Diameters
for different sample volumes





Claristep® Filters are available in a choice of two pore sizes

Ordering Information

Claristep® Filters

Ø mm EFD ¹	Membrane	Housing	Pore Size	Sterile	Qty Pk	Order No.
9.7 mm	RC	PP	0.2 µm	No	96	17C07FT---96
9.7 mm	RC	PP	0.2 µm	No	480	17C07FT--480
9.7 mm	RC	PP	0.45 µm	No	96	17C06FT---96
9.7 mm	RC	PP	0.45 µm	No	480	17C06FT--480

¹ Effective Filtration Diameter
RC = Regenerated Cellulose

Claristep® System

Name	Qty Pk	Order No.
Claristep® Station complete	1	17C--M8
Claristep® Single Tray	1	17C--S1



The Tray can be removed and exchanged



12 x 32 mm sample vials

Additional Components Needed

The free choice of 12 x 32 mm sample vials and lids is enabling you to choose the right vial for your particular sample and application, e.g. for light sensitive substances you can use brown glass. For small sample volumes you can use vessels with inlays. You can use glass or plastic, screw caps and | or slid lids – whatever you prefer.



■ Sartolab® P20 and Sartolab® P20 Plus

Sterile Filtration of Sample Volumes of Up to 5 Liters



Using Sartolab® P20 or Sartolab® P20 Plus in Available Systems

Systems with Luer Lock Connectors

Sartolab® units with a luer lock inlet fit directly onto the corresponding connectors of tubing from peristaltic pumps. This configuration can also be used with luer lock syringes.



Systems with Tubing

If the liquid to be filtered will be pumped through open tubing from a pressure tank or a peristaltic pump, then a Sartolab® unit with a hose nipple inlet is required. The stepwise increase in diameter of the nipple, from 6 mm to 12 mm, makes it suitable for a wide range of tubing.

Application

The Sartolab® P20 is a ready-to-use pressure filtration unit for sterile filtration of media and aqueous solutions in batches ranging from 100 mL to 5 L. For media that contain sera and difficult-to-filter solutions, a Sartolab® P20 Plus unit with an incorporated prefilter is also available.

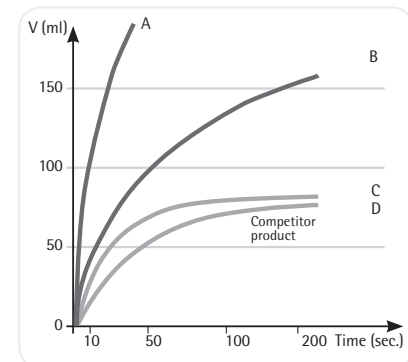
Security

The effectiveness of every batch of 0.2 µm cellulose acetate membranes for sterile filtration is confirmed by bacteria challenge tests (HIMA) using *Brevundimonas diminuta*. Only biosafe

material is used in the filtration units; they have been proven non-toxic by passing the USP plastics test for toxicity. Tests with MRC-5 human lung cells on cellulose acetate membranes and glass fiber prefilters showed no cytotoxic effects. Finished units are also tested for their sterile filtration capability and for housing and membrane integrity.

Fast Filtration

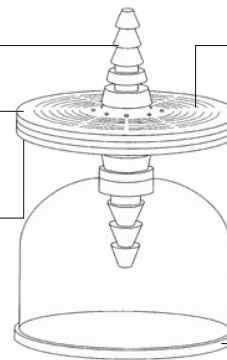
The combination of a large filtration area (20 cm²) and the optimal design of the filter support guarantees high flow rates with high total throughputs. Automatic venting of any trapped air through the PTFE membrane-protected vent ports ensures that the entire filter surface is used for effective filtration.



Choice of inlet connector, hose nipple or luer lock

With or without binder-free glass fiber prefilter

Polycarbonate housing and surfactant-free cellulose acetate membrane filter



20 cm² filter area, optimal flow path and automatic venting

Outlet side with protective filling bell

Specifications

Technical Specifications for Sartolab® P20 and Sartolab® P20 Plus Units with SFCA Membrane and PTFE Venting

Properties	Description	
	Sartolab® P20 18052 18053	Sartolab® P20 Plus 18056 18058
Filter material	SFCA, type 12587, 0.2 µm pore size and PTFE	SFCA, type 12587 0.2 µm pore size plus GF, 100% free of binding agents and PTFE
Housing material	Polycarbonate	Polycarbonate
Color code	Transparent	Transparent
Filter diameter	64 mm	64 mm
Connector inlet	Female luer lock or stepped hose nipple with 6 mm to 12 mm outer diameter	Female luer lock or stepped hose nipple with 6 mm to 12 mm outer diameter
Connector outlet	Hose nipple	Hose nipple
Filling bell	Yes	Yes
Filtration area	20 cm ²	20 cm ²
Hold-up volume before bubble point	1 mL	Approx 1.5 mL
Housing burst pressure	> 5 bar 72.5 psi	> 5 bar 72.5 psi
Bubble point	≥ 3.2 bar 46.4 psi	≥ 3.2 bar 46.4 psi
Max. recommended inlet pressure	3 bar 43.5 psi	3 bar 43.5 psi
Flow rate for water	≥ 250 mL/min at Δp = 1 bar 14.5 psi	≥ 250 mL/min at Δp = 1 bar 14.5 psi
Filtration range	100 mL to max. 5 L	100 mL to max. 10 L
pH-range	4–8	4–8
Non-specific protein adsorption	No loss of protein detectable (filtration of γ globulin, method acc. to Bradford)	< 80 µg/cm ² (filtration of γ globulin, method acc. to Bradford)
Sterilization	EO sterilization	EO sterilization
Biosafety	Class VI Plastics Test	Class VI Plastics Test
Operating instructions	Directions for use included in each box	Directions for use included in each box

Technical Specifications for Sartolab® P20 and Sartolab® P20 Plus Units with PES Membrane

	Sartolab® P20 18075	Sartolab® P20 Plus 18068	Sartolab® P 20 Plus 18076
Filter material	PES, type 15407 MI 0.2 µm pore size	PES, 0.45 µm pore size plus GF, 100% free of binding agents	PES, 0.45 µm pore size plus GF, 100% free of binding agents
Housing material	Polycarbonate	Polycarbonate	Polycarbonate
Color code	Transparent	Transparent	Transparent
Filter diameter	61 mm	64 mm	61 mm
Connector inlet	Female luer lock or stepped hose nipple	Female luer lock or stepped hose nipple	Stepped hose nipple
Connector outlet	with 6 mm to 12 mm outer diameter Hose nipple	with 6 mm to 12 mm outer diameter Hose nipple	with 6 mm to 12 mm outer diameter Hose nipple
Filling bell	No	Yes	No
Filtration area	20 cm ²	20 cm ²	20 cm ²
Hold-up volume before bubble point	1 mL	Approx 1.5 mL	1 mL
Housing burst pressure	> 5 bar 72.5 psi	> 5 bar 72.5 psi	> 5 bar 72.5 psi

Properties	Description		
	Sartolab® P20 Plus 18068	Sartolab® P20 18075	Sartolab® P 20 Plus 18076
Bubble point	≥ 3.2 bar 46.4 psi	≥ 3.2 bar 46.4 psi	≥ 3.2 bar 46.4 psi
Max. recommended inlet pressure	3 bar 43.5 psi	3 bar 43.5 psi	3 bar 43.5 psi
Flow rate for water	400 mL/min at Δp = 1 bar 14.5 psi	400 mL/min at Δp = 1 bar 14.5 psi	> 600 mL/min at Δp = 1 bar 14.5 psi
Filtration range	100 mL – max. 10 L	100 mL – max. 5 L	100 mL – max. 5 L
pH range	1 to 8	1 to 8	1 to 8
Non-specific protein adsorption	< 80 µg/cm ² (filtration of γ globulin, method acc. to Bradford)	No loss of protein detectable (filtration of γ globulin, method acc. to Bradford)	No loss of protein detectable (filtration of γ globulin, method acc. to Bradford)
Sterilization	EO sterilization	EO sterilization	–
Biosafety	Class VI Plastics Test	Class VI Plastics Test	Class VI Plastics Test
Operating instructions	Directions for use included in each box	Directions for use included in each box	Directions for use included in each box

□ Ordering Information

Type	Membrane	Housing	Pore Size	Inlet	Outlet	Sterile	Qty./Pkg.	Order No.
Sartolab® P20								
	SFCA	PC	0.2 µm	Hose Barb	Hose Barb	Yes	10	18052-----D
	SFCA	PC	0.2 µm	Luer Lock	Hose Barb	Yes	10	18053-----D
	PES	PC	0.2 µm	Luer Lock	Hose Barb	Yes	10	18075-----D ¹
Sartolab® P20 Plus								
	SFCA + GF	PC	0.2 µm	Hose Barb	Hose Barb	Yes	10	18056-----D
	SFCA + GF	PC	0.2 µm	Luer Lock	Hose Barb	Yes	10	18058-----D
	PES + GF	PC	0.2 µm	Luer Lock	Hose Barb	Yes	10	18068-----D
	PES + GF	PC	0.45 µm	Hose Barb	Hose Barb	No	100	18076-----N ¹
	GF*	PC	n.a.	Luer Lock	Hose Barb	No	10	18072-----D ¹

SFCA – Cellulose Acetate, PES – Polyethersulfone, GF – Glass Fiber Prefilter, PC – Polycarbonate
GF* – Glass Fiber Filter only

¹ without filling bell

■ Sartolab® 150v

Disposable PES Vacuum Filtration Unit for Volumes of Up to 15 Liters



Description

Sartolab® 150v is a disposable, sterile, ready-to-use membrane filter capsule for highest convenience. Sartolab® 150v capsules are made of a unique hydrophilic polyethersulfone (PES) membrane providing outstanding total throughput, flow rate performance, low extractables and broadest chemical compatibility.

Applications

Typical applications include sterilizing-grade filtration of:

- Biological fluids
- Purified water
- Media
- Buffers

Compatibility

The PES membrane is compatible with a pH range from 1 to 14, making Sartolab® 150v ideal for filtration of solutions with either high or low pH values.

Microbiological Retention

Sartolab® 150v capsules rated to 0.2 µm are fully validated as sterilizing-grade filters according to HIMA and ASTM F-838-05 guidelines.

Quality Control

Each individual element is integrity tested by the bubble point and diffusion test methods before final assembly. Sartolab® 150v capsules are designed, developed and manufactured in accordance with a ISO 9001:2000 certified quality management system.

Performance

The unique pleated filter construction, combined with the highly asymmetric pore structure of the PES membrane, provides excellent flow rates and superior total throughput performance, especially in comparison to conventional disc filter systems.

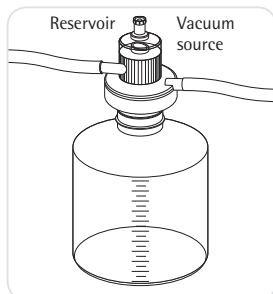
□ Specifications

Materials and Data

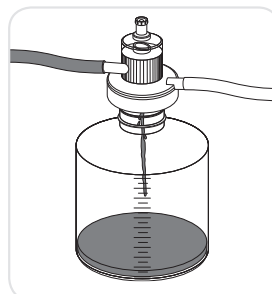
Filter	Polyethersulfone (PES)
Support fleece	Polypropylene fleece
Housing	Polypropylene
Vent	PTFE
Pore size	0.2 µm
Filtration area	150 cm ²
Flow rate	1.5 L/min
Total throughput	15 L

□ Ordering Information

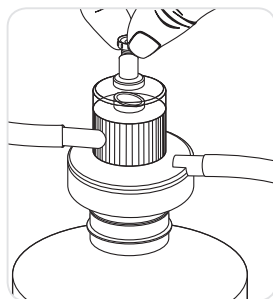
Qty./Pkg.	Order No.
3	18080-----M

Easy to Use

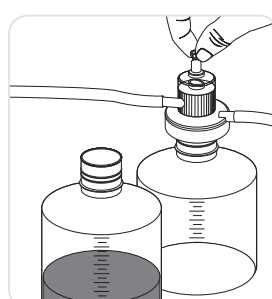
Place Sartolab® 150v on the bottle neck. Vacuum is automatically created when used with a water jet pump or a different vacuum source.



Create vacuum to start filtration.



To fill multiple receiving bottles, break the vacuum by opening the valve on top of the Sartolab® 150v housing.



To continue filtration with the next receiving bottle, close the valve.

■ Sartolab® RF|BT

Disposable Filter Systems and Bottle-Top Filters



Sartolab® single-use sterile filter systems and bottle-top filters are designed for the vacuum filtration of tissue culture media and components, biological fluids, and other aqueous solutions.

The Sartolab® single-use 150 mL, 250 mL, 500 mL and 1,000 mL bottles are designed as storage containers for sterile media, buffers, or other aqueous solutions.



These products are for laboratory use only and not for human parenteral applications.

Materials

The filter funnels, dust covers and receiver bottles are manufactured from virgin, heavy metal-free polystyrene. The tubing adapters, filter adapters, and the plug seal caps are made of heavy metal-free polyethylene. Sartolab® filter systems are available with polyethersulfone membranes. All units are sterilized by gamma irradiation.

Performance

The filter units contain membranes integrally sealed to a support grid designed to maximize flow and reduce foaming and protein denaturation.

The membranes are compatible with most aqueous solutions and tested for use in cell culture applications.

Filter Systems

The filter adapter utilizes a gasket design to ensure a vacuum-tight seal on the receiver | storage bottle. Each filter unit also contains a convenient tubing adapter that will fit most vacuum hoses.

The bottles are single-use containers. They cannot withstand autoclaving or use at temperatures greater than 70°C. The suitability of the bottles for storage of solutions below 0°C depends both on the solution and the storage conditions. Many aqueous solutions, including culture media, have been successfully frozen and stored at temperatures down to -20°C. However, a trial run under actual conditions is strongly recommended to test the suitability of the bottles for frozen storage.

□ Specifications

Pore Size	Membrane Material	Characteristics
0.22 µm	Polyethersulfone	Very low protein binding and low extractables, fast flow rate
0.45 µm	Cellulose Acetate	Optimized for aqueous liquids, very low nonspecific binding
0.1 µm	Polyethersulfone	Very low protein binding and low extractables, fast flow rate

Bottle-Top Filters

The filter adapter is available with a 45 mm thread finish, and is designed to ensure a vacuum-tight seal on customer-supplied bottles with the appropriate thread finish. Each filter unit also contains a tubing adapter that will fit most vacuum hoses.

Chemical Compatibility

The mechanical strength, color, appearance, and dimensional stability of filter systems, bottle-top filters and plastic bottles are affected to varying degrees by the chemicals with which they come in contact. Specific operating conditions, especially temperature, will also affect their chemical resistance. A table is provided to serve as a general guideline for the chemical resistance of Sartolab® single-use sterile filters and bottles.

Chemical Resistance of Sartolab® Filters

Chemical Class	Membrane (PES)	Membrane (CA)	Housing (PS)
Weak Acids	3	2	1
Strong Acids	3	2	2
Alcohols	2	2	2
Aldehydes	3	3	3
Aliphatic Amines	1	3	3
Aromatic Amines	3	3	3
Bases	3	3	1
Esters	3	3	3
Hydrocarbons	3	2	3
Ketones	3	3	3

Key: 1. recommended

2. may be suitable for some applications; a trial run is recommended

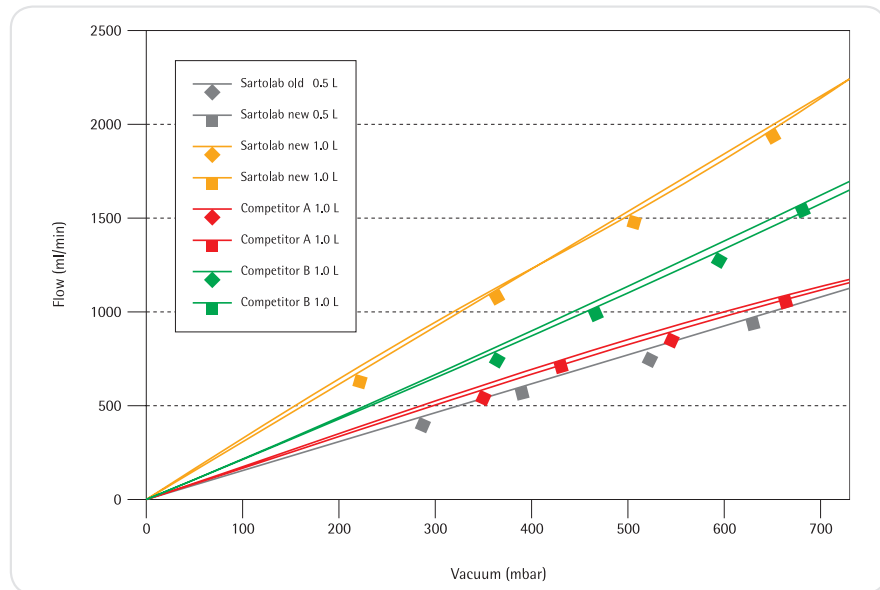
3. not recommended. PS, polystyrene; PES, polyethersulfone; CA, cellulose acetate.

□ Ordering Information

Volume	Membrane	Filter Area	Qty./Pkg.	Order No.
Sartolab® RF Filtration System Including Collection Bottle				
150 mL	0.22 µm PES	18 cm ²	12	180C1-----E
250 mL	0.22 µm PES	24 cm ²	12	180C7-----E
500 mL	0.22 µm PES	39 cm ²	12	180C2-----E
1,000 mL	0.22 µm PES	62 cm ²	12	180C3-----E
1,000 mL	0.1 µm PES	62 cm ²	12	180C8-----E
250 mL	0.45 µm CA	24 cm ²	12	180A1-----E
500 mL	0.45 µm CA	39 cm ²	12	180A2-----E
1,000 mL	0.45 µm CA	62 cm ²	12	180A3-----E

Sartolab® BT Bottle-Top Filters Without Integrated Collection Bottle				
150 mL	0.22 µm PES	18 cm ²	48	180C4-----K
500 mL	0.22 µm PES	39 cm ²	12	180C5-----E
1,000 mL	0.22 µm PES	62 cm ²	12	180C6-----E
500 mL	0.45 µm CA	39 cm ²	12	180A4-----E

Water Throughput



■ Sartoclear Dynamics® Lab P15

Clarification and Sterile Filtration of up to 15 mL Mammalian Cell Culture in One Step



Sartoclear Dynamics® Lab P15 is a new kit for single step harvesting of 15 mL animal cell cultures with even high cell densities. With this kit, the clarification and sterile filtration of mammalian cell culture is performed in a single pressure filtration step. Inspired by the plasma industry, Sartoclear Dynamics® is based on the principles of body feed filtration.

This ready to use kit combines a 20 mL syringe pre-filled with a 0.5 g filter aid and an integrated filter* for sterile filtration. The filter aid facilitates filtration through the sterile filter while allowing complete protein recovery.

A convenient filling tube can be connected to the syringe, for the easy recovery of samples from 50 mL Falcon tubes or ambr 15 bioreactors.

As a result, this method replaces centrifugation and subsequent sterile filtration steps, leading to clarified and sterilized cell culture harvest in minutes. Your cell culture harvest will be available for following sample concentration by ultrafiltration and downstream analytics in no time.

Sartoclear® Dynamics Lab P15 Features:

- Single step mammalian cell culture harvest
- Designed for cell densities up to 20×10^6 cells and even more
- Fast and effortless filtration
- Optimized for cell culture harvest from ambr® 15 bioreactors

*The sterile filter included in the kit contains a 0.2 μm polyethersulfone membrane and a prefilter made of 100 % high-purity quartz: The choice of these materials, along with the larger surface area of the filter, enables higher flow rates.

■ Quick and Easy Filtration



1. Fill the syringe with cell culture broth.



2. Shake the syringe to mix the broth with the filter aid.



3. Connect the sterile filter to the syringe and filter.

Typical Results

Cell Type	Cell Density	Viability	Mab concentration before filtration	Mab concentration after filtration	Recovery Rate
CHO DG44	16 × 10 ⁶ cells/mL	78%	6.02 g/L	5.77 g/L	96%
CHO DG44	38 × 10 ⁵ cells/mL	48%	0.43 g/L	0.43 g/L	100%

Specifications

DE Syringe

Syringe material	Syringe barrel and plunger rod: polypropylene; stopper: latex-free elastomer
Syringe Cap	Polyamide
Filling tube material	Polypropylene
Filter aid	0.5 g highly pure diatomaceous earth (Celpure® C300 – pharmaceutical-grade*)

Sterile Filter

Housing material	Polycarbonate
Prefilter material	100% high-purity quartz, binder-free
Filter material	0.2 µm polyethersulfone
Filter diameter	61 mm
Filtration area	20 cm ²
Connector inlet	Female luer lock
Connector outlet	Hose barb
Hold-up volume	Approx. 3 mL
Housing burst pressure	> 5 bar 72.5 psi
Packaging	Individually packed
Sterilization	EO sterilization

Ordering Information

Product Name	Number of units per box	Order No.
Sartoclear Dynamics® Lab P15	6 × 20 mL syringes, pre-filled with 0.5 g DE, including caps and filling tubes 6 × sterile filters	SDLP--0015-----C

* Celpure® is a trademark of Advanced Minerals

■ Sartoclear Dynamics® Lab V

Clarification and Sterile Filtration of 50 mL up to 1 L Mammalian Cell Culture in One Step



Sartoclear Dynamics® Lab V kits enable clarification and sterile filtration to be performed in a single step. These kits simplify the cell harvesting process by fully eliminating the centrifugation step otherwise needed for clarification. As a result, they enable cell cultures to be efficiently clarified and sterilized in minutes – quickly and easily.

Sartoclear Dynamics® Lab kits have been designed and optimized for harvesting mammalian cell cultures, such as CHO, HEK, hybridomas and many others, with cell densities of up to 20×10^6 cells/mL.

Each kit provides filter aid pouches for clarification and Sartolab® RF vacuum filtration units for sterile filtration. The filter aid used in Sartoclear Dynamics® Lab products is made of highly-pure diatomaceous earth (DE) that is insoluble and inert. It is packed in ready-to-use pouches in pre-wetted condition to prevent the release of dust particles. The DE pouches are gamma-irradiated to rule out any contamination.

Sartoclear® Dynamics Lab V Features:

- Single step mammalian cell culture harvest
- Designed for cell densities up to 20×10^6 cells
- Fast and effortless filtration

■ Quick and Easy Filtration



1. Attach the Sartolab® RF unit to a vacuum source. Pour the filter aid into your cell culture.



2. Mix to homogenize. Pour the cell culture and filter aid mixture into the Sartolab® RF first ...



3. ... then filter by simply starting the pump.
4. After 5–15 min, the sample will be available for subsequent downstream processing steps, such as protein purification and concentration.

Typical Results

Cell Type	Cell Density	Viability	mAb concentration before filtration	Mab concentration after filtration	Recovery Rate	Turbidity
CHO	14.46 × 10 ⁶ cells/mL	85.2%	5.2 g/L	5.15 g/L	99%	18 NTU
HEK	8 × 10 ⁶ cells/mL	70%	0.035 g/L	0.034 g/L	97%	8 NTU

Specifications

Pouches of Filter Aid

Diatomaceous Earth (DE)	1 g, 5 g or 10 g highly pure diatomaceous earth, (Celpure® C300 – pharmaceutical grade)*, mixed with water in a ratio of 1 DE: 1.25 ultrapure water
Packaging Sterilization	Dust-free, gamma irradiated pouches

Vacuum Filtration Units – Sartolab® RF

Funnel, dust cover, receiver bottles	Heavy metal-free polystyrene
Filter adapter, tubing adapter, cap	Heavy metal-free polyethylene
Filter material	0.22 µm polyethersulfone
Packaging Sterilization	Single-packaged, sterile

* Celpure® is a trademark of Advanced Minerals

Each Sartoclear Dynamics® Lab V kit is comprised of pouches of filter aid and Sartolab® RF vacuum filtration units that match your needs. Find the right kit in just two easy steps:

1. Determine the volume range of your sample to be filtered.
2. Then reference it to the cell density of your cell culture.

Volume*	Cell density**		
	< 5 million cells/mL	5 – 10 million cells/mL	10 – 20 million cells/mL
50 – 150 mL	SDLV-0150-02C--E		SDLV-0150-05C--2
150 – 250 mL	SDLV-0250-05C--2		SDLV-0250-10C--2
250 – 500 mL	SDLV-0500-05C--2	SDLV-0500-10C--2	SDLV-0500-20C--E
500 – 1000 mL	SDLV-1000-10C--2	SDLV-1000-20C--E	SDLV-1000-40C--E

* Especially for cultures with high cell densities (>10 million cells/mL), we recommend that you use a Sartolab® RF unit nominally rated for the next higher volume of the solution to be filtered as it will accelerate your filtration run (larger membrane surface area | higher quantity of DE).

** Tested with CHO cell lines with a cell viability of approx. 85%

□ Ordering Information

Description	Qty. of Units	Order No.
Filtration of > 50 mL to 150 mL mammalian cell cultures		
Sartoclear Dynamics® Lab V, 150 mL, 2 g		
Filtration of 50 mL to 150 mL with 2 g of DE per unit Contents: 1 × 180C1-----E (12 × Sartolab® RF 150; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-01.0-----2 (24 × pouches of filter aid, 1 g)	12	SDLV-0150-02C--E
Sartoclear Dynamics® Lab V, 150 mL, 5 g		
Filtration of up to 150 mL with 5 g of DE per unit Contents: 2 × 180C1-----E (24 × Sartolab® RF 150; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-05.0-----2 (24 × pouches of filter aid, 5 g)	24	SDLV-0150-05C--2
Filtration of 125 mL to 250 mL mammalian cell cultures		
Sartoclear Dynamics® Lab V, 250 mL, 5 g		
Filtration of up to 250 mL with 5 g of DE per unit Contents: 2 × 180C7-----E (24 × Sartolab® RF 250; 0.22 µm; PES, single-packaged; sterile) 1 × SDLKG-05.0-----2 (24 × pouches of filter aid, 5 g)	24	SDLV-0250-05C--2
Sartoclear Dynamics® Lab V, 250 mL, 10 g		
Filtration of up to 250 mL with 10 g of DE per unit Contents: 2 × 180C7-----E (24 × Sartolab® RF 250; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-10.0-----2 (24 × pouches of filter aid, 10 g)	24	SDLV-0250-10C--2
Filtration of 250 mL to 500 mL mammalian cell cultures		
Sartoclear Dynamics® Lab V, 500 mL, 5 g		
Filtration of up to 500 mL with 5 g of DE per unit Contents: 2 × 180C2-----E (24 × Sartolab® RF 500; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-05.0-----2 (24 × pouches of filter aid, 5 g)	24	SDLV-0500-05C--2
Sartoclear Dynamics® Lab V, 500 mL, 10 g		
Filtration of up to 500 mL with 10 g of DE per unit Contents: 2 × 180C2-----E (24 × Sartolab® RF 500; 0.22 µm; PES, single-packaged; sterile) 1 × SDLKG-10.0-----2 (24 × pouches of filter aid, 10 g)	24	SDLV-0500-10C--2

Description	Qty. of Units	Order No.
Sartoclear Dynamics® Lab V, 500 mL, 20 g Filtration of up to 500 mL with 20 g of DE per unit Contents: 1 × 180C2-----E (12 × Sartolab® RF 500; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-10.0-----2 (24 × pouches of filter aid, 10 g)	12	SDLV-0500-20C--E
Filtration of 500 mL to 1,000 mL mammalian cell cultures		
Sartoclear Dynamics® Lab V, 1,000 mL, 10 g Filtration of up to 1,000 mL with 10 g of DE per unit Contents: 2 × 180C3-----E (24 × Sartolab® RF 1000; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-10.0-----2 (24 × pouches of filter aid, 10 g)	24	SDLV-1000-10C--2
Sartoclear Dynamics® Lab V, 1,000 mL, 20 g Filtration of up to 1,000 mL with 20 g of DE per unit Contents: 1 × 180C3-----E (12 × Sartolab® RF 1000; 0.22 µm; PES; single-packaged; sterile) 1 × SDLKG-10.0-----2 (24 × pouches of filter aid, 10 g)	12	SDLV-1000-20C--E
Sartoclear Dynamics® Lab V, 1,000 mL, 40 g Filtration of up to 1,000 mL with 40 g of DE per unit Contents: 1 × 180C3-----E (12 × Sartolab® RF 1000; 0.22 µm; PES; single-packaged; sterile) 2 × SDLKG-10.0-----2 (48 × pouches of filter aid, 10 g)	12	SDLV-1000-40C--E

Chemical Compatibility

	Material							Minisart® Types											
	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	GF depth filter	Housing MBS	Housing PP	Minisart® HighFlow	Minisart® NML	Ophthalsart	Minisart® NML Plus	Minisart® NML GF	Minisart® HY	Minisart® Air	Minisart® RC	Minisart® NY	Minisart® NY Plus	Minisart® SRP
Filter Membrane	PES	SFCA	PTFE	RC	PA				PES	SFCA	SFCA		PTFE	RC	PA	PA	PTFE	PES	
Pre-Filter						GF			-	-	GF	GF	-	-	-	GF	-	-	
Housing Material							MBS	PP	MBS	MBS	MBS	MBS	MBS	PP	PP	PP	PP	PP	
Sterilization																			
Ethylene oxide	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	
Gamma irradiation	++	++	- ¹	++	-	++	++	-	++	++	++	++	- ¹	-	-	-	-	-	
Autoclaving 121°C, 30 min	++	++	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	
Solvents																			
Acetone	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Acetonitrile	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Gasoline	+	++	++	++	++	++	+	++	+	+	+	+	+	++	++	++	++	+	
Benzene	+	+	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	+	
Benzyl alcohol	+	+	++	++	++	++	-	+	-	-	-	-	-	++	++	++	++	+	
n-Butyl acetate	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
n-Butanol	++	++	++	++	++	++	+	++	+	+	+	+	+	++	++	++	++	++	
Cellosolve	+	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	+	
Chloroform	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Cyclohexane	-	-	++	++	++	++	+	+	-	-	-	+	+	+	+	+	+	-	
Cyclohexanone	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	
Diethylacetamide	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Diethyl ether	-	+	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Dimethyl formamide	-	-	++	+	+	++	-	++	-	-	-	-	-	+	+	+	++	-	
Dimethylsulfoxide	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Dioxane	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Ethanol, 98%	++	++	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	
Ethyl acetate	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	
Ethylene glycol	++	+	++	++	++	++	++	++	++	+	+	++	++	++	++	++	++	++	
Formamide	++	-	++	+	++	++	++	++	++	-	-	++	++	+	++	++	++	++	
Glycerin	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	
n-Heptane	+	+	++	++	++	++	++	+	+	+	+	+	++	+	+	+	+	+	
n-Hexane	+	+	++	++	++	++	++	+	+	+	+	+	++	+	+	+	+	+	
Isobutanol	++	+	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	
Isopropanol	++	++	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	
Isopropyl acetate	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Methanol, 98%	+	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	+	
Methyl acetate	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	
Methylene chloride	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	-	
Methyl ethyl ketone	-	+	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	
Methyl isobutyl ketone	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	
Monochlorobenzene	+	+	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	+	
Nitrobenzene	-	-	++	++	+	++	-	+	-	-	-	-	-	+	+	+	+	-	
n-Pentane	++	++	++	++	++	++	+	+	+	+	+	+	+	+	+	+	+	+	
Perchloroethylene	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	-	

	Material							Minisart® Types												
	PES membrane	SFCA membrane	PTFE membrane	RC membrane	Nylon membrane	GF depth filter	Housing MBS	Housing PP	Minisart® HighFlow	Minisart® NML	Ophthalsart	Minisart® NML Plus	Minisart® NML GF	Minisart® HY	Minisart® Air	Minisart® RC	Minisart® NY	Minisart® NY Plus	Minisart® SRP	Minisart® PES
Filter Membrane	PES	SFCA	PTFE	RC	PA				PES	SFCA	SFCA		PTFE	RC	PA	PA	PA	PTFE	PES	
Prefilter						GF			-	-	GF	GF	-	-	-	GF	-	-		
Housing Material							MBS	PP	MBS	MBS	MBS	MBS	MBS	PP	PP	PP	PP	PP	PP	PP
Solvents (continued)																				
Pyridine	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	++	-
Carbon tetrachloride	-	-	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	+	+	-
Tetrahydrofuran	-	-	++	++	++	++	-	++	-	-	-	-	-	++	++	++	++	++	++	-
Toluene	-	+	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	+	+	-
Trichloroethane	-	-	++	++	+	++	-	+	-	-	-	-	-	+	+	+	+	+	+	-
Trichloroethylene	-	+	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	+	+	-
Xylene	-	+	++	++	++	++	-	+	-	-	-	-	-	+	+	+	+	+	+	-
Acids																				
Acetic acid, 25%	+	+	++	++	-	++	+	++	+	+	+	+	+	++	-	-	-	++	+	+
Acetic acid, 80%	-	-	++	+	-	++	-	+	-	-	-	-	-	+	-	-	-	+	-	-
Hydrofluoric acid, 25%	+	-	++	+	-	++	+	+	+	-	-	+	+	+	-	-	-	+	+	+
Hydrofluoric acid, 50%	+	-	++	+	-	++	-	+	-	-	-	-	-	+	-	-	-	+	+	+
Perchloric acid, 25%	-	-	++	-	-	++	-	+	-	-	-	-	-	-	-	-	-	+	-	-
Phosphoric acid, up to 10%	+	+	++	-	-	++	+	+	+	+	+	+	+	-	-	-	-	+	+	+
Phosphoric acid, 86%	+	+	++	-	-	++	-	+	-	-	-	-	-	-	-	-	-	+	+	+
Nitric acid, 30%	+	-	++	-	-	++	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Nitric acid, conc.	-	-	++	-	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochloric acid, 15%	++	+	++	-	-	++	+	+	+	+	+	+	+	-	-	-	-	+	+	+
Hydrochloric acid, 20%	++	-	++	-	-	++	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Sulfuric acid, 25%	+	-	++	+	-	++	++	++	+	-	-	++	++	+	-	-	-	++	+	+
Sulfuric acid, 98%	-	-	++	-	-	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroacetic acid, 25%	-	-	++	++	-	++	-	+	-	-	-	-	-	+	-	-	-	+	-	-
Bases																				
Ammonia, 1N	++	+	++	+	++	++	+	++	+	+	+	+	+	+	++	++	++	++	++	++
Ammonium hydroxide, 25%	+	+	++	+	++	+	-	+	-	-	-	-	-	+	+	+	+	+	+	+
Potassium hydroxide, 32%	++	-	++	-	+	+	-	++	-	-	-	-	-	-	+	+	++	++	++	++
Sodium hydroxide, 1N	++	-	++	+	++	+	-	++	-	-	-	-	-	+	++	+	++	++	++	++
Sodium hydroxide, 32%	++	-	++	-	+	-	-	+	-	-	-	-	-	+	-	-	+	+	+	+
Aqueous solutions																				
Formaldehyde, 30%	+	++	++	+	++	++	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium hypochlorite, 5%	++	-	++	-	-	++	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Hydrogen peroxide, 35%	++	-	++	-	-	++	+	++	+	-	-	+	+	-	-	-	-	++	++	++
pH range																				
pH 1 to 14	-	-	++	-	-	++	-	++												
pH 1 to 13	++	-	++	-	-	++	-	++												
pH 3 to 14	+	-	++	+	++	++	-	++												
pH 3 to 12	++	-	++	++	++	++	+	++												
pH 4 to 8	++	++	++	++	++	++	++	++												

Legend

High compatibility	++
Limited compatibility	+
Not compatible	-

¹ Gamma irradiation feasible for Minisart® Air

Contact time: 24 hours at 20°C. Chemical compatibilities can be influenced by various factors. Therefore, we recommend that you confirm compatibility with the liquid you want to filter by performing a trial filtration run before you start your actual filtration.