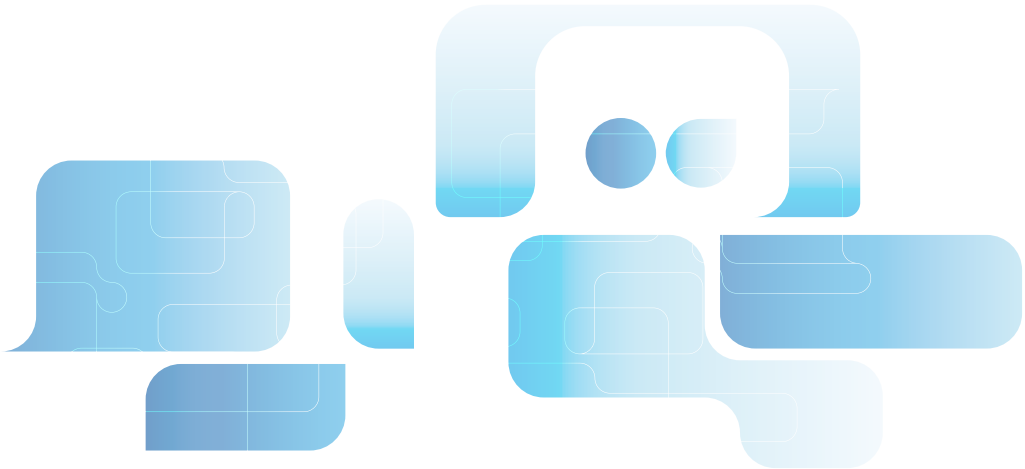
FILTER TECHNOLOGY

SAMPLE PREPARATION CATALOG



FILTER TECHNOLOGY

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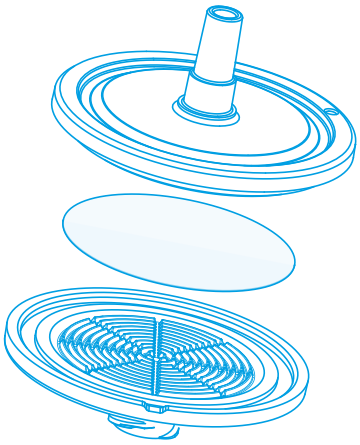
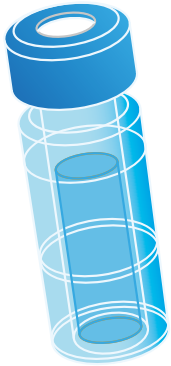




Better performance for certain results

GVS Filter Technologies is constantly looking for new ways to expand our product offering to meet your needs and ease your application challenges. Our product innovations are the result of understanding your applications and valuing the amazing contributions your work can make to the quality of all our lives.
Whether you are pursuing goals in life science, pharmaceutical methods, research and development, quality control, or specialty environmental applications, we commit to not only deliver a product that works, but to look beyond what simply works and deliver a product that truly makes a difference.

GVS Filter Technologies is one of the few companies to offer a variety of products made from the same materials of construction, allowing for single- or multiple-sample processing of your techniques. We bring together membranes with superior performance, outstanding housing materials, and devices designed to maximize processing accuracy and speed.

Filter Media Selection has never been easy!

1. Consider Chemical Compatibility

Chemical compatibility is defined as the ability of a filter material to resist select chemicals so that the pore structure is not adversely affected by chemical exposure, and the filter material does not shed particles or fibers to add extractables. The chemical compatibility information on page 5 will help you make the right choice. Temperature, time, concentration, applied pressure, and length of exposure also affect compatibility.

Extractable Materials

The membrane manufacturer best prevents contaminants that elute from the filter media. GVS Filter Technologies specifically selects the highest grade of materials and performs rigorous extraction methods on our membrane products to reduce the occurrence of undesired artifacts. Choosing membranes that are compatible with your fluids and experimental conditions will reduce or eliminate extractables.

Binding

Membranes may chemically interact with the sample through electrostatic, ionic, covalent, hydrogen bonding, or other interactions. Binding can be a desirable or undesirable characteristic depending on the requirements of the application.

2. Consider Effective Filtration Area (EFA)

The particulate contained within a fluid affects the life of a filter. As particles are removed from a filter, they block pores and reduce the useable portion of the filter. Fluids with particulate loads will plug a filter more quickly than “clean” fluids. Increasing the EFA can lengthen the life of a filter. The Sample Volume Selection Guide on page 6 outlines general guidelines for the most appropriate filter size for different volumes of liquid.

3. Choose the Right Pore Size

Pore size is best selected by considering the instrumentation used for analysis. UV/V spectrophotometers may only require 1 µm filtration; HPLC analysis may require 0.45 µm filtration; and UHPLC will require 0.2 µm filtration due to the size of the column packing, beads, and internal frits. The filter material’s pore size is determined by the diameter of the smallest particle that is to be retained with a defined, high degree of efficiency. For standard liquid chromatography systems using columns with 5 µm or larger packings, the filtration industry standard is 0.45 µm for syringe filters and mobile phase membranes.
For columns with packings smaller than 5 µm, UHPLC, microbore columns, or when concerned about microbial growth, a 0.2 µm filter is recommended. To clarify samples or when processing difficult-to-filter solutions, 1 to 5 µm pore sizes or glass fiber filters are suggested. Prefilters generally precede smaller pore size final filters and allow the user to process larger fluid volumes before the filter plugs.

The GVS Life Sciences Sample Preparation Family

SEPARA ABLUO ABLUO SUPREME EXTRACTO

GVS Life Sciences offers a range of disposable syringe filter devices designed to provide fast and efficient filtration of aqueous and organic solutions. They are available in a wide variety of sizes and membranes, with a polypropylene or acrylic housing, for both sterile and non sterile laboratory applications.

Features and Benefits

- Lower hold-up volume - due to an improved flow channel design and reduced spacing between the supports within the housing, for better handling of small sample volumes or costly samples
- Increased operating pressure - up to 80 psi due to the over-mold that prevents sample leaking at the seam and keeps the filter unit from bursting in half
- Strict quality control - syringe filters are integrity tested to ensure a proper fit and weld to eliminate any potential filter by-pass
- Accurate labeling - each filter is labeled with the specific filter material and pore size for easy identification even if the syringe filter is not in its original packaging
- Multifunctional connectors - equipped with male luer-lock or male slip and female luer-lock connections
- Polypropylene or Acrylic housing
- Modified Acrylic housing to bidirectionally support the membrane allowing sample injection or aspiration
- Sterile or Non-Sterile options
- Bulk-packages or individual blisters
- Customized product and packaging on request
- Manufactured in the USA - GVS Life Sciences devices are manufactured in our ISO9001 certified plant in Sanford, Maine, USA, using proprietary microporous membranes from our plant in Westborough, Massachusetts, USA.

HPLC Sample Preparation

Products Selection Guide

Sample	Organic or Aqueous	Protein-Based Aqueous	Acid or Base Sample Degassing	Aggressive acids and alcohols	Protein and Biological fluid	Organic solvents
Detection Level / Filter Membrane	< 230 nm Nylon	< 230 nm Polypropylene	<230 nm Polypropylene	PTFE	PVDF	PES	RC

Filter Device	Sample Volume			
	<1mL	< 20 mL	< 100 mL	<1000
	Separa	Abluo 13	Abluo 33	Extracto
			Abluo Supreme	

Pore Size

Filters come in a variety of pore sizes. The most common ones used in physical chemistry laboratories are 0.2 um and 0.45um. Generally, 0.45um is sufficient for the majority of procedures. However, where smaller particles may be present in the sample 0.2 um or 0.1 um might be more appropriate. If you need to filter a smaller particle size (for example, to remove colloids) other types of filtration may be more appropriate

Use	Pore Sizes			
	0.1 µm	0.2 µm	0.45 µm	> 0.45 µm
	Sterilization	ICP-MS (trace metal analysis)	General analysis	Pre-filtration

Tissue Culture Media

Sample Preparation Products Selection Guide

Sample Concerns	Presterlized Preparation Products	
	Lowest Protein Binding	Higher throughput, Quicker Flow Rate
Filter Membrane	Cellulose Acetate	Polyethersulfone

Sample Volume Selection Guide

Volume	Product	Membrane Diameter	Filter	Housing	Pore Size (µm)	Sterile	Non Sterile
< 1 mL	Separa	N/A	Polytetrafluoroethylene		0.20, 0.45	No	Yes
			Regenerated Cellulose	Polypropylene,	0.20, 0.45	No	Yes
			Nylon 66	PTFE and silicone	0.20, 0.45	No	Yes
			Polyvinylidene Fluoride	septa	0.20, 0.45	No	Yes
			Polyethersulfone		0.20, 0.45	No	Yes
< 12 mL	Abluo 13	13 mm	Cellulose Acetate	Acrylic	0,22 0,45 0,8 1,2 5,0	Yes	Yes
< 50 mL	Abluo 33	25 mm	Nylon 66	Acrylic	0,22 0,45 5,0	No	Yes
< 100 mL	Abluo Supreme	25 mm	Mixed Cellulose Esters	Polypropylene	0,22 0,45	No	Yes
			Polyethersulfone	Polypropylene	0,22 0,45	Yes	Yes
			Polytetrafluoroethylene Hydrophilic	Polypropylene	0,22 0,45	No	Yes
			Polytetrafluoroethylene	Polypropylene	0,22 0,45	No	Yes
			Polyethylene	Polypropylene	0,22 0,50	No	Yes
			Regenerated Cellulose	Polypropylene	0,22 0,45	No	Yes
			Polyvinylidene Fluoride	Polypropylene	0,22 0,45	Yes	Yes
			Glass Fiber	Polypropylene	0,7 1,0 1,2 3,1	No	Yes
< 150 mL	Extracto 150		Mixed Cellulose Esters	Polypropylene	0.1 0,22 0,45	Yes	No
< 250 mL	Extracto 250		Polyethersulfone	Polypropylene		Yes	No
< 500 mL	Extracto 500		Nylon 66	Polypropylene		Yes	No
< 1000 mL	Extracto 1000		Cellulose Acetate	Polypropylene		Yes	No
			Polyvinylidene Fluoride	Polypropylene		Yes	No
			Polyethersulfone High Flow	Polypropylene		Yes	No

Cell and Particulate Analysis

Filter Membrane Selection Chart

Material	Code	Property	Features	Application
Cellulose Acetate	CA	Excellent flow rates. Very low protein binding, so they are suitable for protein recovery applications. Hydrophilic, so fine for aqueous and alcoholic media although they have limited solvent resistance. pH range ~4-8.	• Lowest Binding Material Available • Highest Throughput • Strength and Dimension Stability • Uniform Pore Structure • Hydrophilic	• Tissue Culture Media Sterilization • Protein and Enzyme Filtration, Sterilization • Biological Fluid Filtration, Sterilization • Uniform Pore Structure • Hydrophilic
Glass Microfibre	GMF	Chemically inert and available in higher pore sizes than other membranes. Mechanically extremely strong and tolerant to organic solvents. Not idea with strong acids (particularly hydrofluoric acid) or bases. Ideal for high particulates solutions, often used as a pre-filter before a membrane filter. Not a membrane filter and so has a slightly less exact retention efficiency than membranes. Will contribute extractables that interfere with ionic and metals analysis.	• Biologically Inert • Available With or Without Acrylic Binders • High Dirt-Holding Capacity	• Gravimetric Analysis • Prefilter to Extend Final Filter Life • Clarification of Particulate Laden Solutions
Nitrocellulose	NC	High mechanical strength, high flow rates, and low extractable levels. A good choice for trace element analysis applications. High protein binding. pH range ~4-8.	• Consistent Flow Rates • High Throughputs • Uniform Pore Structure • Hydrophilic	• Aqueous Filtration • Microbiological Analysis • Sterility Testing • Gravimetric Analysis With Ashing Technique • Particulate Analysis
Nylon	NY	Nylon membrane filters are hydrophilic, flexible, tear-resistant, and autoclavable. They are resistant to a range of organic solvents and suitable for use with high pH samples. Nylon binds proteins. Unsuitable for acidic solutions. pH range ~3-14.	• Naturally Hydrophilic • Wide Chemical Compatibility Range • Extremely Low Extractables • Strength and Dimensional Stability	• Sterilization, Clarification of Aqueous and Organic Solvent Solutions • HPLC Sample Preparation
Polypropylene	PP	Slightly hydrophobic, can be used with a very wide range of solvents including aggressive hard-to-filter solutions such as strongly acidic samples. High and uniform tolerance to heat and mechanical stress. pH range ~1-14.	• Chemically and Biologically Inert • Wide Chemical Compatibility Range • Extremely Low Extractables • Low Fiber Release • More Defined Pore Size and Greater Retention Efficiency Than Glass Prefilters	• Sterilization, Clarification of Organic Solvent Solutions 0.1, 0.22, 0.45 27 • HPLC Sample Prepartion • Prefilter to Extend Final Filter Life • Final Filter for Noncritical Filtrations • Prefiltering Solvents and Acids
Polyethersulfone	PES	Hydrophilic, stable in low pH, have low levels of extractables, and exhibit low protein binding, making them suitable for many aqueous and organic solvents. PES membranes allow higher liquid flow than PTFE. Temperature resistant. pH range ~3-14 (sometimes quoted as 1-14).	• Low Protein Binding • Low Extractables • Autoclavable • Wide Chemical Compatibility Range • Strength and Dimensional Stability • High Flow Rates • Excellent Sample Recovery • Controlled Pore Structures	• Tissue Culture Media Sterilization • Protein and Enzyme Filtration, Sterilization • Biological Fluid Filtration, Sterilization • Purify and Concentrate Proteins, Enzymes, Nucleic Acids and Antibodies • Desalt
Polytetrafluoroethylene (Teflon)	PTFE	Is perfect for the filtration of gaseous or organic solvent-based samples and highly corrosive substances. Hydrophobic so provides chemical resistance to aggressive media and excellent temperature stability allowing an extended sampling range. If used with aqueous samples, the membrane usually requires pre-wetting (normally by using a small amount of alcohol). Can also be used to prevent moisture passing through air vents. pH range ~1-14.	• Naturally Hydrophobic • Compatible with Strong Acids and aggressive Solvents • Improved Durability and Handling • Natural Hydrophobic • Compatible with High Temperatures • Chemically and Biologically Inert	• Filtration of Strong Acids and Aggressive Solvents • Venting Applications • Filtration of High Temperature Acids and Solvents
Polytetrafluoroethylene Hydrophilic (Teflon)	PTFE	PTFE provides device manufacturers with a consistent, temperature and chemical compatible barrier to microbes and particulate matter. The optimal combination of air flow and water entry pressure adds value to most device designs.	• Naturally hydrophobic or hydrophilic • Compatible with strong acids and aggressive solutions • Improved durability and handling	• Filtration of strong acids and aggressive solutions • Venting applications • Phase separations • Aerosol samplings
Polyethylene	PE	The membrane has better solvent resistance than polycarbonate and captures all particles larger than the precisely controlled pore size on its surface.	• Naturally hydrophilic so pre-treatments and wetting agents are • not required • Smooth, thin, glass-like surface for microscopic visualization • Low protein binding ensures clean results	• Removal of red blood cells from plasma • Air analysis • Cellular assays and diagnostics • Trace element analysis
Rigenrated Cellulose	RC	Made from pure cellulose without wetting agents. Chemical resistance to a wide variety of solvents. High wet strength. Hydrophilic, so suitable for aqueous and organic samples. Very low protein binding capacity. pH range ~3-12.	• Hydrophilic • Excellent chemical compatibility and resistance to organic solvents • Low non-specific adsorption • Superior thermal resistance • High mechanical strength	• Filtration of Aqueous and Organic Solutions • Particle removal from organic solvents or mixtures of aqueous and non-aqueous samples • Ultra-cleaning and de-gassing solvents and mobile phases for HPLC • Clarification • Protein Chemistry
Polyvinylidene Fluoride	PVDF	Designed for high tensile strength, high solvent resistance, and low protein binding, making them suitable for biomedical filtration, sterilization filtration, and HPLC sample preparation. pH range ~1-14.	• Superior strength to withstand aggressive handling or use with automated equipment without breaking or tearing • Low protein binding minimizes retention of proteins in solution • Low extractables ensure tests will be clean with consistent results • Lot-to-lot consistency ensures consistent flow and diffusion rates for dependable results every time	• Preparation of protein-containing solutions prior to chromatography or other instrument analyses. • Useful for a wide range of applications, including aggressive and non-aggressive solvent-based mobile phase. • Offers excellent chemical compatibility, even with aggressive acids and alcohols. • Provides high flow rates and throughput, low extractables and broad chemical compatibility. • Better protection of your analytical results.

Syringeless Filters - SEPARA®

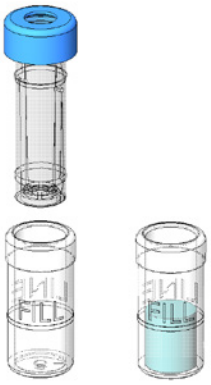
Save time and money in sample preparation process with SEPARA® syringeless filters. The single step filtering process is efficient, simple to use, easy to press and fast.

Features and Benefits

- Rapid sample preparation
- Single step process, filtering with a plunger in the vial
- Sample ready to use after filtration
- Pre-slitted cap ensures easy and clean sample transfer
- Replace syringe, syringe filter, glass vial and cap, reducing waste
- Increase sample integrity with all-in vial and filter
- Compatible with most auto-samplers
- Compatible with most multi-compressors

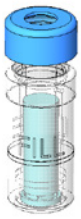
Characteristics

Dimensions: 12 mm diameter x 32 mm height
Materials: Polypropylene, PTFE and Silicone septa
Fill Line Volume: 480 microliter
Filtering Capacity: 450 microliter
Dead Volume: 30 microliter
Compression Force: 8 psi (0.6 bar)
Maximum operating temperature: 120°F (50°C)



sample filling

press down to filter sample



filtered sample ready for analysis

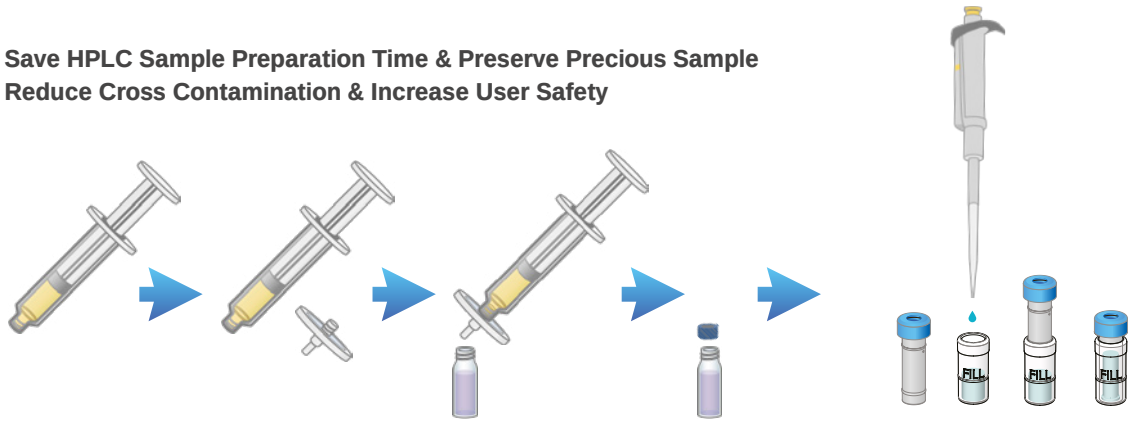
Ordering information

Membrane Material	Pore Size (µm)	Color	Product Code 100/pk
Polytetrafluoroethylene (PTFE)	0.20	Pink	MV32ANPPT002TC01
Polytetrafluoroethylene (PTFE)	0.45	Red	MV32ANPPT004CC01
Regenerated Cellulose (RC)	0.20	Gray	MV32ANPRC002GC01
Regenerated Cellulose (RC)	0.45	Black	MV32ANPRC004LC01
Nylon (NY)	0.20	Light Blue	MV32ANPNY002BC01
Nylon (NY)	0.45	Blue	MV32ANPNY004UC01
Polyvinylidene Fluoride (PVDF)	0.20	Yellow	MV32ANPPV002FC01
Polyvinylidene Fluoride (PVDF)	0.45	Orange	MV32ANPPV004IC01
Polyethersulfone (PES)	0.20	Light Green	MV32ANPPS002EC01
Polyethersulfone (PES)	0.45	Dark Green	MV32ANPPS004WC01

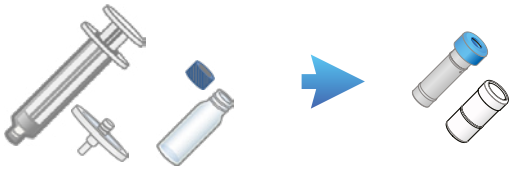
Description	Product Code 1/pk
Multi Vial Compressor	SEPARATOGGLER120

Separa Syringeless Filter: Advantages

Save HPLC Sample Preparation Time & Preserve Precious Sample
Reduce Cross Contamination & Increase User Safety



Save Purchasing Time & Cost On Consumables



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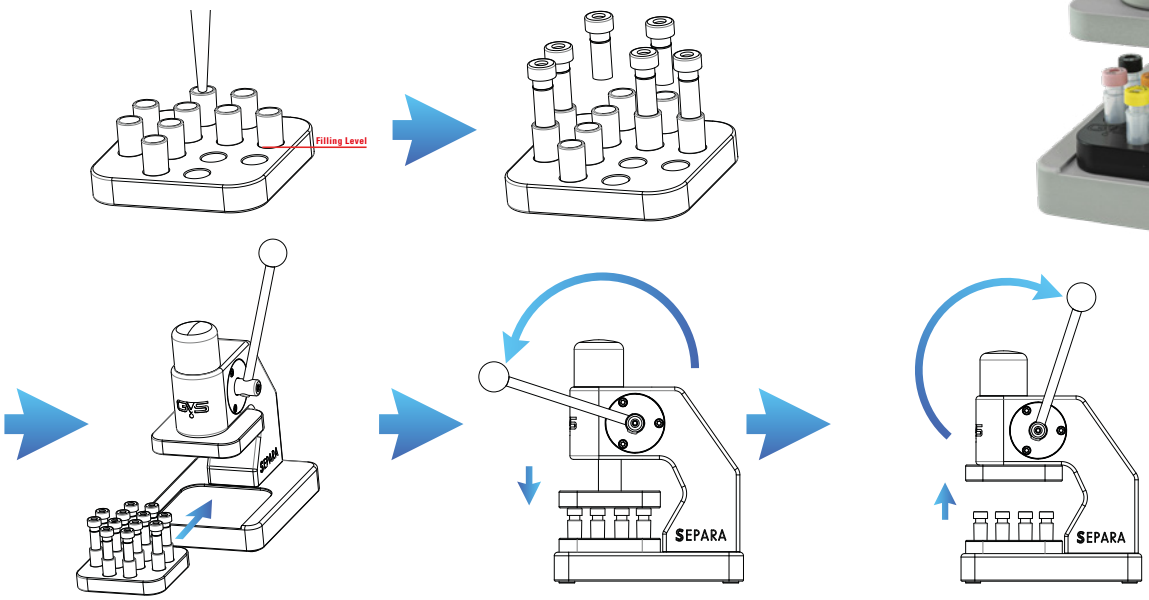
Easy to Dispose & Save Time On Waste Management

Separa Toggler: Multi Vial Compressor

- Further shorten 30% sample preparation time
- Multiple filtration of 12 SEPARA® syringeless filter vial samples at a time
- Reduce user hand stress

SEPARA TOGGLER



13 mm ABLUO® Syringe Filters

Membrane Materials: Cellulose Acetate, Nitrocellulose (MCE), Nylon 66, PE, PES, PTFE, PVDF, Regenerated Cellulose
Membrane Diameter: 13 mm
Effective Filtration Area: 0.76 cm²
Housing Diameter: 18 mm
Housing Materials: Acrylic, Polypropylene, Ultrasonically welded
Inlet / Outlet: FLL / MLL-MLS
Holdup Volume: <50 microliter
Maximum Operating Temperature:
PP Abluo - 90°C / 194°F, Acrylic Abluo 50°C / 122°F
Maximum Operating Pressure: 80 psi
Sterile: No

Typical Applications

- Filtration of Aqueous, Organic and Alcohol Solutions
- Analytical Sample Preparation
- IC Chromatography
- Fuel Hydraulic Fluids and Machined Parts
- Clarification
- Protein Chemistry
- Cell Culture

Characteristics

Ordering information

Membrane Material	Pore Size (µm)	End Fitting	Housing Material	Color	Product Code	
					Packaging 100/pk	Packaging 500/pk
Cellulose Acetate (CA)	0.22	FLL/MLL	Acrylic	Blue	FJ13ANCCA002DH01	FJ13ANCCA002DD01
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	FJ13ANCCA004FH01	FJ13ANCCA004FD01
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	FJ13ANCCA008EH01	FJ13ANCCA008ED01
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	FJ13ANCCA012CH01	FJ13ANCCA012CD01
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	FJ13ANCCA050PH01	FJ13ANCCA050PD01
Nylon 66 (NY)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPNY002AH01	FJ13BNPNY002AD01
Nylon 66 (NY)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPNY004AH01	FJ13BNPNY004AD01
Nylon 66 (NY)	5.0	FLL/MLL	Acrylic	Transparent	N/A	FJ13ANCNY050AD01
Mixed Cellulose Esters (MCE)	0.22	FLL/MLS	Acrylic	Transparent	FJ13BNPNC002AH01	FJ13BNCNC002AD01
Mixed Cellulose Esters (MCE)	0.45	FLL/MLS	Acrylic	Transparent	FJ13BNPNC004AH01	FJ13BNCNC004AD01
Polyethersulfone (PES)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPPS002AH01	FJ13BNPPS002AD01
Polyethersulfone (PES)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPPS004AH01	FJ13BNPPS004AD01
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPPH002AH01	FJ13BNPPH002AD01
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPPH004AH01	FJ13BNPPH004AD01
Polyethylene (PE)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPPE002AH01	FJ13BNPPE002AD01
Polyethylene (PE)	0.50	FLL/MLS	Polypropylene	Transparent	FJ13BNPPE005AH01	FJ13BNPPE005AD01
Regenerated Cellulose (RC)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPRC002AH01	FJ13BNPRC002AD01
Regenerated Cellulose (RC)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPRC004AH01	FJ13BNPRC004AD01
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPPV002AH01	FJ13BNPPV002AD01
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPPV004AH01	FJ13BNPPV004AD01
Polytetrafluoroethylene (PTFE)	0.22	FLL/MLS	Polypropylene	Transparent	FJ13BNPPT002AH01	FJ13BNPPT002AD01
Polytetrafluoroethylene (PTFE)	0.45	FLL/MLS	Polypropylene	Transparent	FJ13BNPPT004AH01	FJ13BNPPT004AD01

33 mm ABLUO® Syringe Filters

Membrane Materials: Cellulose Acetate, Glass Fiber, Nitrocellulose, Nylon 66, PES, Polyethylene, PTFE, PVDF, Regenerated Cellulose
Housing Diameter: 33 mm
Membrane Diameter: 25 mm
Effective Filtration Area: 4.6 cm²
Housing Materials: Acrylic, Polypropylene Ultrasonically welded
Inlet / Outlet: FLL / MLL-MLS
Holdup Volume: <100 microliter
Maximum Operating Temperature:
PP Abluo - 90°C / 194°F, Acrylic Abluo 50°C / 122°F
Maximum Operating Pressure: 80 psi
Sterile: No

Typical Applications

- Analytical sample preparation
- Biological fluids
- Buffer solutions
- Sterile filtering of tissue culture media
- Protein aqueous solutions
- Biofuel analysis
- HPLC sample preparation
- Pesticide testing
- Cannabis potency testing
- Neutraceutical sample preparation

Characteristics

Ordering information

Membrane Material	Pore Size (µm)	End Fitting	Housing Material	Color	Product Code	
					Packaging 100/pk	Packaging 500/pk
Cellulose Acetate (CA)	0.22	FLL/MLL	Acrylic	Blue	FJ25ANCCA002DH01	FJ25ANCCA002DD01
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	FJ25ANCCA004FH01	FJ25ANCCA004FD01
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	FJ25ANCCA008EH01	FJ25ANCCA008ED01
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	FJ25ANCCA012CH01	FJ25ANCCA012CD01
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	FJ25ANCCA050PH01	FJ25ANCCA050PD01
Nylon 66 (NY)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPNY002AH01	FJ25BNPNY002AD01
Nylon 66 (NY)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPNY004AH01	FJ25BNPNY004AD01
Polyethersulfone (PES)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPPS002AH01	FJ25BNPPS002AD01
Polyethersulfone (PES)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPPS004AH01	FJ25BNPPS004AD01
Mixed Cellulose Esters (MCE)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPNC002AH01	FJ25BNPNC002AD01
Mixed Cellulose Esters (MCE)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPNC004AH01	FJ25BNPNC004AD01
Regenerated Cellulose (RC)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPRC002AH01	FJ25BNPRC002AD01
Regenerated Cellulose (RC)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPRC004AH01	FJ25BNPRC004AD01
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPPV002AH01	FJ25BNPPV002AD01
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPPV004AH01	FJ25BNPPV004AD01
Polytetrafluoroethylene (PTFE)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPPT002AH01	FJ25BNPPT002AD01
Polytetrafluoroethylene (PTFE)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPPT004AH01	FJ25BNPPT004AD01
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPPH002AH01	FJ25BNPPH002AD01
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.45	FLL/MLS	Polypropylene	Transparent	FJ25BNPPH004AH01	FJ25BNPPH004AD01
Polyethylene (PE)	0.22	FLL/MLS	Polypropylene	Transparent	FJ25BNPPE002AH01	FJ25BNPPE002AD01
Polyethylene (PE)	0.50	FLL/MLS	Polypropylene	Transparent	FJ25BNPPE005AH01	FJ25BNPPE005AD01
Glass Fiber (GF)	0.70	FLL/MLS	Polypropylene	Transparent	FJ25BNPGF007AH01	FJ25BNPGF007AD01
Glass Fiber (GF)	1.00	FLL/MLS	Polypropylene	Transparent	FJ25BNPGF010AH01	FJ25BNPGF010AD01
Glass Fiber (GF)	1.20	FLL/MLS	Polypropylene	Transparent	FJ25BNPGF012AH01	FJ25BNPGF012AD01
Glass Fiber (GF)	3.10	FLL/MLS	Polypropylene	Transparent	FJ25BNPGF031AH01	FJ25BNPGF031AD01

13 mm STERILE ABLUO® Syringe Filters

Characteristics

Membrane Materials: Cellulose Acetate, PES, PVDF
Housing Diameter: 18 mm
Membrane Diameter: 13 mm
Effective Filtration Area: 0.76 cm²
Housing Material: Acrylic Ultrasonically welded
Inlet / Outlet: FLL / MLL-MLS
Holdup Volume: <50 microliter
Maximum Operating Temperature: 50°C / 122°F
Maximum Operating Pressure: 80 psi
Sterile: Yes

Typical Applications

- Filtration of Aqueous Solutions
- Analytical Sample Preparation
- IC Chromatography
- Sterile Filtration and Clarification
- Protein Chemistry
- Cell Culture
- Clarification

Ordering information

Membrane Material	Pore Size (µm)	End Fitting	Housing Material	Color	Product Code
					Packaging 50/pk
Cellulose Acetate (CA)	0.22	FLL/MLL	Acrylic	Blue	FJ13ASCCA002DL01
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	FJ13ASCCA004FL01
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	FJ13ASCCA008EL01
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	FJ13ASCCA012CL01
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	FJ13ASCCA050PL01
Polyethersulfone (PES)	0.22	FLL/MLS	Acrylic	Transparent	FJ13BSCPS002AL01
Polyethersulfone (PES)	0.45	FLL/MLS	Acrylic	Transparent	FJ13BSCPS004AL01
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Acrylic	Transparent	FJ13BSCPV002AL01
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Acrylic	Transparent	FJ13BSCPV004AL01

33 mm STERILE ABLUO® Syringe Filters

Characteristics

Membrane Materials: Cellulose Acetate, Nylon 66, PES, PVDF
Housing Diameter: 33 mm
Membrane Diameter: 25 mm
Housing Material: Acrylic Ultrasonically welded
Effective Filtration Area: 4.6 cm²
Inlet / Outlet: FLL / MLL-MLS
Holdup Volume: <100 microliter
Maximum Operating Temperature: 50°C / 122°F
Maximum Operating Pressure: 80 psi
Sterile: Yes

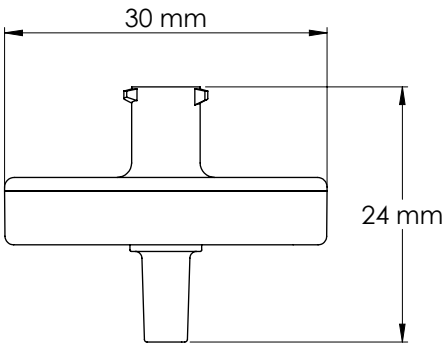
Typical Applications

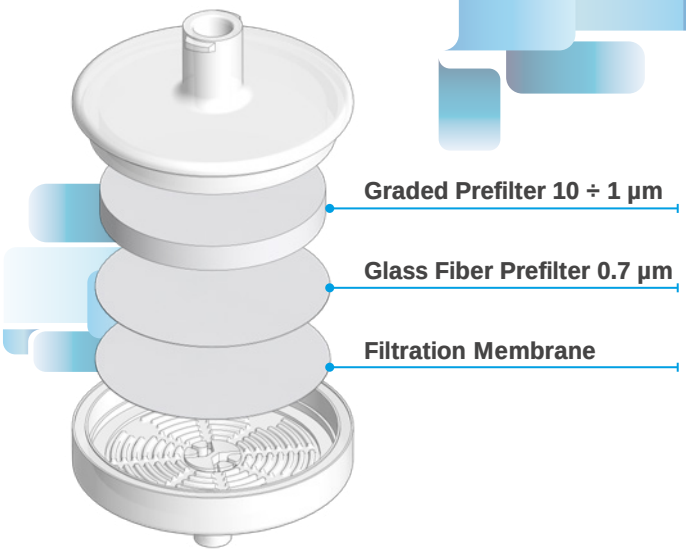
- Filtration of Aqueous and Alcohol Solutions
- Sterile Filtration and Clarification
- Cell Culture
- Analytical Sample Preparation
- IC Chromatography
- Clarification
- Protein Chemistry
- Filtration of Aqueous and Organic Solutions

Ordering information

Membrane Material	Pore Size (µm)	End Fitting	Housing Material	Color	Product Code
					Packaging 50/pk
Cellulose Acetate (CA)	0.22	FLL/MLS	Acrylic	Transparent	FJ25BSCCA002AL01
Cellulose Acetate (CA)	0.45	FLL/MLS	Acrylic	Transparent	FJ25BSCCA004AL01
Cellulose Acetate (CA)	0.80	FLL/MLS	Acrylic	Transparent	FJ25BSCCA008AL01
Cellulose Acetate (CA)	0.22	FLL/MLL	Acrylic	Blue	FJ25ASCCA002DL01
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	FJ25ASCCA004FL01
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	FJ25ASCCA008EL01
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	FJ25ASCCA012CL01
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	FJ25ASCCA050PL01
Mixed Cellulose Esters (MCE)	0.22	FLL/MLS	Acrylic	Transparent	FJ25BSCNC002AL01
Mixed Cellulose Esters (MCE)	0.45	FLL/MLS	Acrylic	Transparent	FJ25BSCNC004AL01
Nylon 66 (NY)	0.10	FLL/MLS	Acrylic	Transparent	FJ25BSCNY001AL01
Nylon 66 (NY)	0.22	FLL/MLS	Acrylic	Transparent	FJ25BSCNY002AL01
Nylon 66 (NY)	0.45	FLL/MLS	Acrylic	Transparent	FJ25BSCNY004AL01
Nylon 66 (NY)	1.20	FLL/MLS	Acrylic	Transparent	FJ25BSCNY012AL01
Nylon 66 (NY)	5.00	FLL/MLS	Acrylic	Transparent	FJ25BSCNY050AL01
Polyethersulfone (PES)	0.80	FLL/MLS	Acrylic	Transparent	FJ25BSCPS008AL01
Polyethersulfone (PES)	0.22	FLL/MLS	Acrylic	Transparent	FJ25BSCPS002AL01
Polyethersulfone (PES)	0.45	FLL/MLS	Acrylic	Transparent	FJ25BSCPS004AL01
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Acrylic	Transparent	FJ25BSCPV002AL01
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Acrylic	Transparent	FJ25BSCPV004AL01

Abluo Supreme





Membrane Diameter: 25 mm
Effective Filtration Area: 4.63 cm²
Housing Diameter: 30 mm
Housing Materials: Clear Polypropylene
Maximum Operating Temperature: 90°C / 194°F
Maximum Operating Pressure: 75 psi
Shelf Life (normal conditions): 3 years

Ordering information

Membrane	Pore Size (µm)	Description	Product Code
NY	0.2	ABLUO SUPREME Syringe Filter 25mm, FLL/MLS - NY 0.2 µm	GF25BNPGN002AD01
NY	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - NY 0.45 µm	GF25BNPGN004AD01
PES	0.2	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PES 0.2 µm	GF25BNPGS002AD01
PES	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PES 0.45 µm	GF25BNPGS004AD01
PTFE	0.2	ABLUO SUPREME Syringe Filter 2 5mm, FLL/MLS - PTFE 0.2 µm	GF25BNPGT002AD01
PTFE	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PTFE 0.45 µm	GF25BNPGT004AD01
PTFE (Hydrophilic)	0.2	ABLUO SUPREME Syringe Filter 2 5mm, FLL/MLS - PTFE Hydrophilic 0.2 µm	GF25BNPGH002AD01
PTFE (Hydrophilic)	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PTFE Hydrophilic 0.45 µm	GF25BNPGH004AD01
PVDF	0.2	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PVDF 0.2 µm	GF25BNPGV002AD01
PVDF	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - PVDF 0.45 µm	GF25BNPGV004AD01
CA	0.2	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - CA 0.2 µm	GF25BNPGA002AD01
CA	0.45	ABLUO SUPREME Syringe Filter 25 mm, FLL/MLS - CA 0.45 µm	GF25BNPGA004AD01

Vacuum Filtration

EXTRACTO

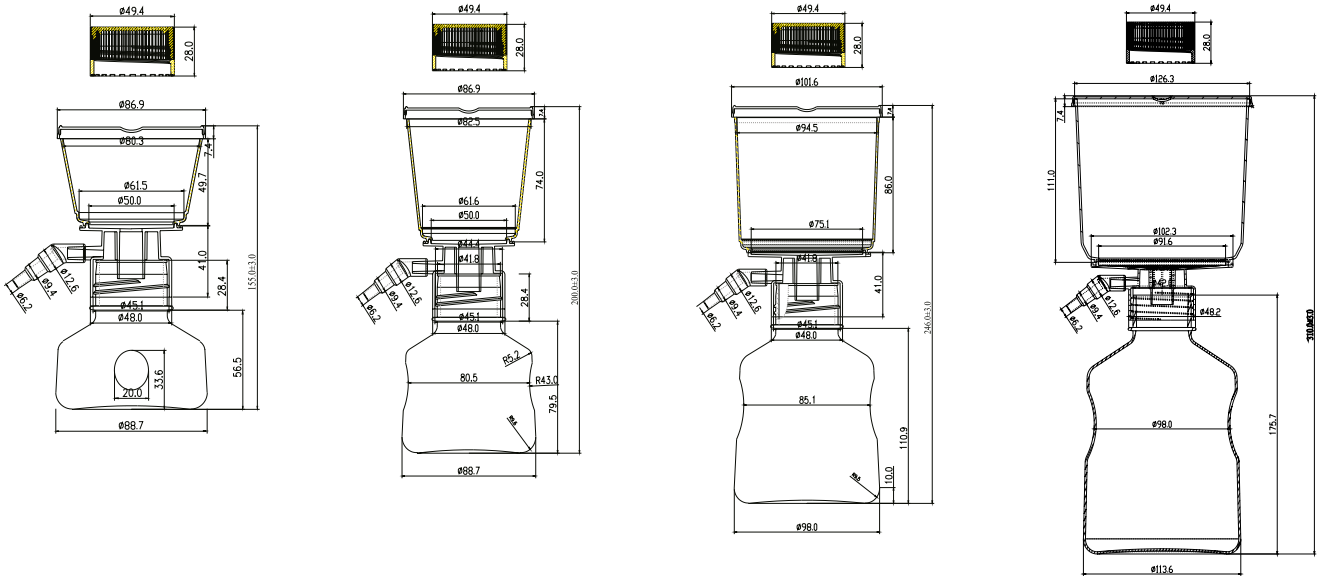
GVS Vacuum Filters are very useful in large volume samples separation and purification.

Characteristics

- Available with 5 membrane sorts of PVDF, PES, MCE ,Nylon and CA
- 3 membrane pore sizes of 0.10 μm, 0.22 μm and 0.45 μm
- 4 volumes size of 150, 250, 500 and 1000 ml
- Light weight and heavy wall construction
- Large knurls on the reservoir bottle cap for easy screw
- Designed wide and easy access bottle mouth for efficiently and stably pour out
- Engraved graduation ensure veracity
- Ergonomically designed sidewalls and collar can simplify tightening /loosening and adjustments
- Designed hose connector can fit multiplicate hose diameters
- Non-pyrogenic
- Gamma irradiation sterilized

Ordering Information

- Vacuum packaged in easy tear-to-open plastic bag and receiver bottle cap is individually wrapped
- Each individual unit is lot-numbered for easy identification and tracking



Housing Material	Capacity (ml)	Full Unit Overall Height (mm)	Filter Diameter (mm)	Working Volume (mm)	Hold-up Volume (ml)	Linker and Cap Material	Fitting Outlet (mm)	Maximum Operating Temperature (°C)
ABS	150	156	50	150	3	PP	45	45
ABS	250	200	50	250	3	PP	45	45
ABS	500	500	75	500	3	PP	45	45
ABS	1000	1000	91	1000	3	PP	45	45

Disposable Filtration Products

GVS Laboratory Filtration Products series, including syringe filters and Vacuum Filters, are designed specifically for the filtration of culture media and organic solvents in research and industrial laboratories They are purpose-built with features designed to bring the highest levels of performance and purity to your research A variety of membrane types and membrane areas are for choice that offer the wide applicability range for separation and purification of most liquid samples to meet different laboratory needs. The filtration products should be driven by syringes or vacuum pumps. All the products are manufactured with high quality material [Acrilonitrile butadiene stirene (ABS), Polypropylene (PP) or Polystyrene (GPPS)] and by proven technique, which assure them work under pressure and still hold integrity.

Tips on choosing membrane MCE (Mixed Cellulose Ester)

By the mixture of nitrocellulose and cellulose acetate, hydrophilic, chemical compatibility, low protein adsorption. The use temperature can not be higher than 40°C, the optimum pH range is 3-6. Particle analysis, particle removal, biochemical analysis, HPLCsample preparation for general media and aqueous solutions.
Can not be used to filter ethanol and alkaline solution.

NY (Nylon)

Providing a broad range of chemical compatibility of the filtration of either aqueous or organic solvents, hydrophilic, can be used in a broad pH range.

PVDF (Polyvinylidene fluoride)

Extremely low protein-binding, for filtration of non-aggressive aqueous and mild organic solutions, or were maximizing protein recovery is important.

PES (Polyethersulfone}

Low-affinity for proteins and extractable with substantially faster flow rates than PVDF; suitable for pre-filtration and filtration of buffers and culture media.

PTFE (Polytetrafluoroethylene)

Extremely strong chemically resistant and is compatible with various sterilizing methods; ideal for gas and in organic or organic samples in aggressive environments.

CA (Cellulose Acetate)

Lowest binding material available Hydrophilic and high throughput Strength and dimension stability Uniform pore structure.

Ordering information

Membrane Material	Pore Size (µm)	Capacity (ml)	Membrane Diameter (mm)	Qty	Cat No.
MCE	0,22	150	Ø50	12/Pk	EXVF0150YNC02AZS
	0,22	250	Ø50	12/Pk	EXVF0250YNC02AZS
	0,22	500	Ø75	12/Pk	EXVF0500YNC02BZS
	0,22	1000	Ø91	12/Pk	EXVF1000YNC02CZS
	0,45	150	Ø50	12/Pk	EXVF0150YNC04AZS
	0,45	250	Ø50	12/Pk	EXVF0250YNC04AZS
	0,45	500	Ø75	12/Pk	EXVF0500YNC04BZS
	0,45	1000	Ø91	12/Pk	EXVF1000YNC04CZS
PES	0,1	150	Ø50	12/Pk	EXVF0150YPS01AZS
	0,1	250	Ø50	12/Pk	EXVF0250YPS01AZS
	0,1	500	Ø75	12/Pk	EXVF0500YPS01BZS
	0,1	1000	Ø91	12/Pk	EXVF1000YPS01CZS
	0,22	150	Ø50	12/Pk	EXVF0150YPS02AZS
	0,22	250	Ø50	12/Pk	EXVF0250YPS02AZS
	0,22	250	Ø75	12/Pk	EXVF0250YPS02BZS
	0,22	500	Ø75	12/Pk	EXVF0500YPS02BZS
	0,22	1000	Ø91	12/Pk	EXVF1000YPS02CZS
	0,45	150	Ø50	12/Pk	EXVF0150YPS04AZS
	0,45	250	Ø50	12/Pk	EXVF0250YPS04AZS
	0,45	250	Ø75	12/Pk	EXVF0250YPS04BZS
	0,45	500	Ø75	12/Pk	EXVF0500YPS04BZS
	0,45	1000	Ø91	12/Pk	EXVF1000YPS04CZS
PVDF	0,1	150	Ø50	12/PK	EXVF0150YPV01AZS
	0,1	250	Ø50	12/PK	EXVF0250YPV01AZS
	0,1	500	Ø75	12/PK	EXVF0500YPV01BZS
	0,1	1000	Ø91	12/PK	EXVF1000YPV01CZS
	0,22	150	Ø50	12/PK	EXVF0150YPV02AZS
	0,22	250	Ø50	12/PK	EXVF0250YPV02AZS
	0,22	500	Ø75	12/PK	EXVF0500YPV02BZS
	0,22	1000	Ø91	12/PK	EXVF1000YPV02CZS
	0,45	150	Ø50	12/PK	EXVF0150YPV04AZS
	0,45	250	Ø50	12/PK	EXVF0250YPV04AZS
	0,45	500	Ø75	12/PK	EXVF0500YPV04BZS
	0,45	1000	Ø91	12/PK	EXVF1000YPV04CZS

Membrane Material	Pore Size (µm)	Capacity (ml)	Membrane Diameter (mm)	Qty	Cat No.
Nylon	0,22	150	Ø50	12/PK	EXVF0150YNY02AZS
	0,22	250	Ø50	12/PK	EXVF0250YNY02AZS
	0,22	500	Ø75	12/PK	EXVF0500YNY02BZS
	0,22	1000	Ø91	12/PK	EXVF1000YNY02CZS
	0,45	150	Ø50	12/PK	EXVF0150YNY04AZS
	0,45	250	Ø50	12/PK	EXVF0250YNY04AZS
	0,45	500	Ø75	12/PK	EXVF0500YNY04BZS
	0,45	1000	Ø91	12/PK	EXVF1000YNY04CZS
CA	0,22	150	Ø50	12/PK	EXVF0150YCA02AZS
	0,22	250	Ø50	12/PK	EXVF0250YCA02AZS
	0,22	500	Ø75	12/PK	EXVF0500YCA02BZS
	0,22	1000	Ø91	12/PK	EXVF1000YCA02CZS
	0,45	150	Ø50	12/PK	EXVF0150YCA04AZS
	0,45	250	Ø50	12/PK	EXVF0250YCA04AZS
	0,45	500	Ø75	12/PK	EXVF0500YCA04BZS
	0,45	1000	Ø91	12/PK	EXVF1000YCA04CZS
PES Hi-Flo	0,22	150	Ø50	12/PK	EXVF0150YPX02AZS
	0,22	250	Ø50	12/PK	EXVF0250YPX02AZS
	0,22	500	Ø75	12/PK	EXVF0500YPX02BZS
	0,22	1000	Ø91	12/PK	EXVF1000YPX02CZS
	0,45	150	Ø50	12/PK	EXVF0150YPX04AZS
	0,45	250	Ø50	12/PK	EXVF0250YPX04AZS
	0,45	500	Ø75	12/PK	EXVF0500YPX04BZS
	0,45	1000	Ø91	12/PK	EXVF1000YPX04CZS

Bottle Top Filter

GVS Bottle Top Filters are very useful in research laboratories for sterilization or laboratory fluid clarification

- Available with 5 membrane sorts of PVDF, PES, MCE,CA and Nylon
- 3 membrane pore sizes of 0.10 µm, 0.22 µm and 0.45 µm
- 4 volume sizes of 150, 250, 500 and 1000ml
- Light weight and heavy wall construction
- Designed wide and easy access bottle mouth for efficiently and stably
- Non-pyrogenic
- Gamma irradiation sterilized
- Packaged in easy peel-to-open plastic bag
- Each individual unit is lot-numbered for easy identification

Membrane Material	Pore Size (µm)	Capacity (ml)	Membrane Diameter (mm)	Qty	Cat No.
PES	0.10	150	Ø50	24/PK	EXBT0150YPS01AWS
	0.10	250	Ø50	24/PK	EXBT0250YPS01AWS
	0.10	500	Ø75	24/PK	EXBT0500YPS01BWS
	0.10	1000	Ø91	24/PK	EXBT1000YPS01CWS
	0,22	150	Ø50	24/PK	EXBT0150YPS02AWS
	0,22	250	Ø50	24/PK	EXBT0250YPS02AWS
	0,22	250	Ø75	24/PK	EXBT0250YPS02BWS
	0,22	500	Ø75	24/PK	EXBT0500YPS02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YPS02CWS
	0,45	150	Ø50	24/PK	EXBT0150YPS04AWS
	0,45	250	Ø50	24/PK	EXBT0250YPS04AWS
	0,45	250	Ø75	24/PK	EXBT0250YPS04BWS
	0,45	500	Ø75	24/PK	EXBT0500YPS04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YPS04CWS
PVDF	0.10	150	Ø50	24/PK	EXBT0150YPV01AWS
	0.10	250	Ø50	24/PK	EXBT0250YPV01AWS
	0.10	500	Ø75	24/PK	EXBT0500YPV01BWS
	0.10	1000	Ø91	24/PK	EXBT1000YPV01CWS
	0,22	150	Ø50	24/PK	EXBT0150YPV02AWS
	0,22	250	Ø50	24/PK	EXBT0250YPV02AWS
	0,22	500	Ø75	24/PK	EXBT0500YPV02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YPV02CWS
	0,45	150	Ø50	24/PK	EXBT0150YPV04AWS
	0,45	250	Ø50	24/PK	EXBT0250YPV04AWS
	0,45	500	Ø75	24/PK	EXBT0500YPV04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YPV04CWS

Membrane Material	Pore Size (µm)	Capacity (ml)	Membrane Diameter (mm)	Qty	Cat No.
MCE	0,22	150	Ø50	24/PK	EXBT0150YNC02AWS
	0,22	250	Ø50	24/PK	EXBT0250YNC02AWS
	0,22	500	Ø75	24/PK	EXBT0500YNC02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YNC02CWS
	0,45	150	Ø50	24/PK	EXBT0150YNC04AWS
	0,45	250	Ø50	24/PK	EXBT0250YNC04AWS
	0,45	500	Ø75	24/PK	EXBT0500YNC04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YNC04CWS
PES Hi-Flo	0,22	150	Ø50	24/PK	EXBT0150YPX02AWS
	0,22	250	Ø50	24/PK	EXBT0250YPX02AWS
	0,22	500	Ø75	24/PK	EXBT0500YPX02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YPX02CWS
	0,45	150	Ø50	24/PK	EXBT0150YPX04AWS
	0,45	250	Ø50	24/PK	EXBT0250YPX04AWS
	0,45	500	Ø75	24/PK	EXBT0500YPX04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YPX04CWS
Nylon	0,22	150	Ø50	24/PK	EXBT0150YNY02AWS
	0,22	250	Ø50	24/PK	EXBT0250YNY02AWS
	0,22	500	Ø75	24/PK	EXBT0500YNY02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YNY02CWS
	0,45	150	Ø50	24/PK	EXBT0150YNY04AWS
	0,45	250	Ø50	24/PK	EXBT0250YNY04AWS
	0,45	500	Ø75	24/PK	EXBT0500YNY04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YNY04CWS
CA	0,22	150	Ø50	24/PK	EXBT0150YCA02AWS
	0,22	250	Ø50	24/PK	EXBT0250YCA02AWS
	0,22	500	Ø75	24/PK	EXBT0500YCA02BWS
	0,22	1000	Ø91	24/PK	EXBT1000YCA02CWS
	0,45	150	Ø50	24/PK	EXBT0150YCA04AWS
	0,45	250	Ø50	24/PK	EXBT0250YCA04AWS
	0,45	500	Ø75	24/PK	EXBT0500YCA04BWS
	0,45	1000	Ø91	24/PK	EXBT1000YCA04CWS

Solution Bottle

Capacity(ml)	Sterile	Package	Cat No.
150	Yes	24/PK	EXBO0150G000000WS
250	Yes	24/PK	EXBO0250G000000WS
500	Yes	24/PK	EXBO0500G000000WS
1000	Yes	24/PK	EXBO1000G000000WS

FLAMETIP Pipette Micro Filter Tips

Description
Natural, with filter, sterilized in rack

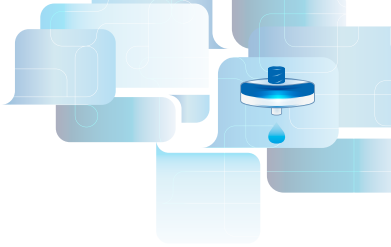
Purpose
Use for liquid transfer, zero retention filter.

Materials
Tips: PP (Polypropylene)
Color: Natural
Rack box: PP (Polypropylene)

Features
- FLAMETIP are manufactured from super clear high quality Polypropylene
- The surfaces of the tips are produced through a special process, this process makes the tip inner surface become super hydrophobic
- Preferred accessories for most brand micropipettor
- Tips with PP filter are also available
- Packaged in re-sealable plastic bags or extra-rigid autoclavable racks
- Every rack or case is printed with lot No. for quality traceability
- Non-Pyrogenic and validated per FDA guidelines on LAL testing for medical devices and company guidelines. The acceptance level for product is less than 0.5 EU/ml
- DNase/RNase-free
- Sterilized by gamma irradiation SAL 10-6(1S011137)
- Shelf life: 3 years after month of production
- Manufactured in a Class 100,000 cleanroom environment
- Manufactured under ISO13485:2016 and ISO9001:2015 quality management system
- This product has been tested and is free of any detectable Nucleic Acid.
- All material are certified metal-free which compliance with US Pharmacopoeia guidelines.
- This product has been tested and is free of ATP

Ordering Information

Code	Description	Sterile	Qty/pack	Qty/box	Qty/case
FTS252010	10 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS233010	10 µl , long, natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS252020	20 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS252100	100 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS231200	200 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS233300	300 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS252000	1000 µl , natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920
FTS371000	1000 µl , long, natural, with filter, sterilized, packaged in rack box	Yes	96	960	1920



Printing History:
Version: 31/05/2022

FILTER TECHNOLOGY

FILTER TECHNOLOGY

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