



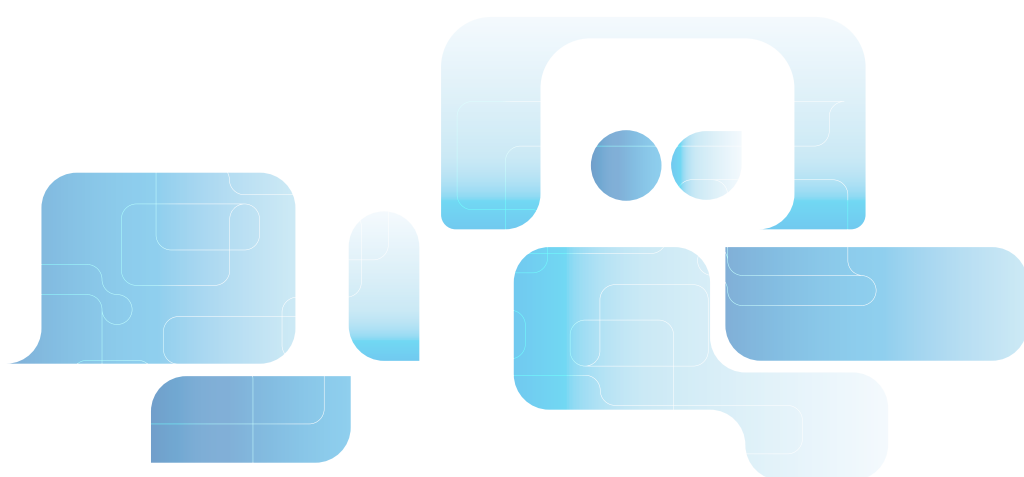
Life Sciences Product Collection



Advanced filtration solutions
Made in USA



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The GVS Group

In over 45 years of history, GVS has evolved from a supplier of components for the healthcare sector to a global group that produces highly technological diversified filtration solutions.

Wide range of products and custom design expertise

GVS produces a wide range of filter materials, filters and off-the-shelf components in all its divisions, enabling its customers to reduce the design time for new product launches.

All the GVS divisions work in highly regulated environments and the Group therefore operates with extremely high-quality standards. Thanks to its research and development centres located all over the world, GVS is also able to offer an extremely efficient and personalized service to meet its customers' needs: from product conception and design to testing and mass production.

Dynamic and flexible structure

GVS has developed a streamlined, dynamic and technologically advanced structure that has made it possible to achieve constant and balanced growth. The Group currently employs a total of 4869 people who work in automated assembly departments, in lines for the production and processing of filter membranes and in class 10,000 and 100,000 cleanrooms.

Global growth

The GVS Group has always paid great attention to research, development and innovation of its products and processes and has shown a strong trend towards development in global markets since its foundation.

In addition to the corporate headquarters in Bologna, GVS currently has 19 plants in Italy, United Kingdom, Brazil, United States, China, Mexico, Romania e Puerto Rico, and 29 commercial offices located all over the world. GVS has always adopted a "glocal" approach: it operates locally in contact with its customers, but relies on the strength of a global network.



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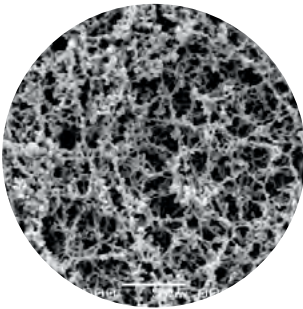
Disc and Sheet Membrane

Product Collection



Disc and Sheet Membrane

Cellulose Acetate (CA) Membrane



GVS Cellulose Acetate (CA) Filtration Membrane is a supported, hydrophilic membrane that is naturally low binding. It is ideal for use in filtration applications where maximal recovery of protein is critical.

Exceptional Strength for Improved Performance

GVS CA Filtration membranes are composed of pure cellulose acetate that is internally supported by an inert polyester web. This web gives each membrane exceptional strength to prevent cracking, tearing, breaking and distortion when handled or creased. The resulting membrane has dimensional stability that can withstand autoclaving or steam sterilizing leaving the membrane unaffected in temperatures up to 135°C (274°F). The exceptional dimensional strength and low binding characteristics of GVS CA Filtration Membranes provides higher throughputs than competitive offerings and reduces the amount of filter changes needed during proteinaceous solution filtering. Its uniform pore size and consistent flow rates ensure reliable performance.

Performance

Pore Size (µm)	Flow Time (s)	Volume/Vacuum (mL/ in Hg)	Flow Rate (mL/min/cm ² @ 10psi)	Bubble Point (psi)
0.22	70-155	250/20	10.26-22.72	50-72
0.45	20-49	250/20	32.46-79.53	30-45
0.65	15-40	250/20	39.77-106.04	18-32
0.8	13-36	250/20	44.18-122.36	14-28
1.2	40-248	500/5	51-318	11-22
5.0	23-59	500/5	216-553	6-16

Ordering information

Dimen- sions Packa- ging	13 mm 100/pk	25 mm 100/pk	47 mm 100/pk	50 mm 100/pk	90 mm 25/pk	142 mm 25/pk	293 mm 25/pk	20x20 mm 5/pk	30 cmx 3m 1/pk
Pore sizes	0.22 µm	78562-038	78562-480	78172-520	78562-150	78562-010	78562-404	78562-280	78562-260
	0.45 µm	78562-386	78173-142	78172-740	78562-092	78562-246	78562-402	78562-560	78562-128
	0.65 µm		78562-286	78562-388					
	0.8 µm	78562-174		78172-670				78562-520	78562-252
	1.2 µm			78562-082			78562-236		78562-130
	5.0 µm		78562-626	78562-100					78562-616

Features & Benefits

- Superior strength: Can withstand aggressive handling or be used with automated equipment without breaking or tearing
- Low extractables: Ensures tests will be clean with consistent results
- Hydrophilic: Wets out rapidly
- Lot-to-lot consistency: Quality checks ensure consistent flow and diffusion rates for dependable results every time
- Nonlysing of cells: Prevents contamination of critical solutions
- Can be autoclaved or steam sterilized

Typical Applications

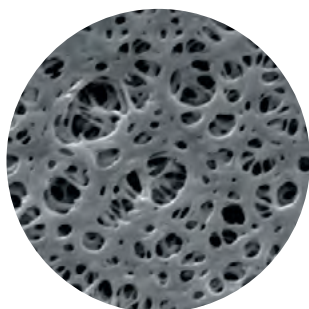
- Protein and enzyme filtration
- Biological fluid sterilization
- Tissue culture media sterilization
- Cold sterilization

Product Characteristics

USP Class VI testing	Passed
Thickness	65 - 100 µm
Maximum Operating Temperature	274°F (135°C)
Sealing Compatibility	Ultrasonics, Heat, Radio Frequency and Insert Molding
Pore Size Range	0.22 to 5.0 µm

Disc and Sheet Membrane

Polyethersulfone (PES) Membrane



GVS Polyethersulfone (PES) Filtration Membrane is hydrophilic and cast from pure polyethersulfone polymer. It is designed to remove particulates during general filtration and its low protein and drug binding characteristics make it ideally suited for use in life science applications.

Product Uniformity and High Sensitivity Maximize Performance

This strong, microporous film asymmetric membrane is constructed from a high-temperature polyethersulfone polymer that is acid and base resistant. Its strength and durability are advantageous during usage that involves aggressive handling or automated equipment. GVS PES Filtration Membrane is naturally hydrophilic without

added wetting agents and has low extractables.

Due to its inherent uniform porosity and controlled pore size, GVS PES Filtration Membrane efficiently removes particulates from solutions during general filtration. Additionally, its low protein and drug binding characteristics maximize recovery of critical drugs used in I.V. therapy, chemotherapy and open-heart surgery.

Features & Benefits

- Hydrophilic: Eliminates the need for wetting agents that can potentially interfere with analyses
- Low extractables: Ensures test results will not be compromised by wetting agents or other extractables
- Low drug and protein binding: Maximizes recovery of critical drugs or proteins
- Wide range of pore sizes: Pore size range of 0.03 μm to 8.0 μm enables specific pore size selection for given applications
- Superior burst strength: Protects the integrity of the membrane under high pressure
- Lot-to-lot consistency: Quality checks, both down and across the membrane, ensure dependable results every time

Typical Applications

- Protein and enzyme filtration and sterilization
- Biological fluid filtration and sterilization
- Pharmaceutical sterilization
- Environmental water studies

Performance

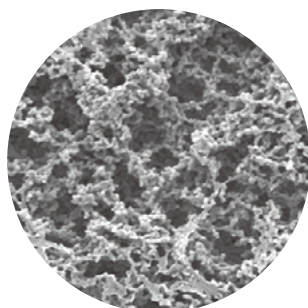
Pore Size (μm)	Flow Time (s)	Volume/Vacuum (mL/ in Hg)	Flow Rate (mL/min/cm ² @ 10 psi)	Bubble Point (psi)
0.03	200-500	250/20	3.18-7.95	90-110
0.1	100-200	250/20	7.95-15.91	70-90
0.2	35-70	250/20	22.72-45.45	50-70
0.4	20-40	250/20	39.77-79.53	35-50
0.6	12-25	250/20	63.63-132.55	21-32
0.8	80-160	500/5	80-159	13-28
1.2	65-130	500/5	98-196	11-22

Ordering information

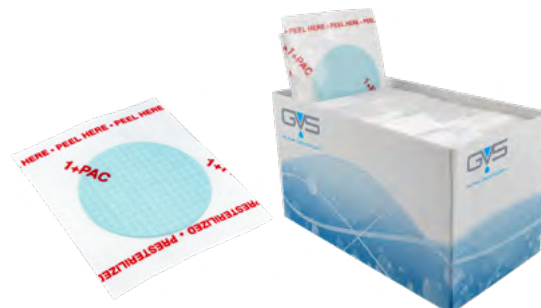
Dimensions Packaging	13 mm 100/pk	25 mm 100/pk	47 mm 100/pk	90 mm 25/pk	142 mm 25/pk	293 mm 25/pk	200x200 mm 5/pk	30 cmx3 m 1/pk
Pore sizes	0.03 μm	78562-132	78562-464	78562-054			78562-612	78562-628
	0.1 μm			78172-350	78172-488		78562-304	78562-162
	0.22 μm		78173-448	78172-234	78173-310	78562-460	78562-602	78561-984
	0.45 μm		78173-644	78562-416	78172-978	78562-594	78562-422	78562-114
	0.65 μm		78562-094			78562-040	78562-002	78562-062
	0.8 μm		78562-466	78562-556			78562-472	78562-366
	1.2 μm		78173-652	78172-756	78562-052		78562-378	78562-502
	5.0 μm			78562-528	78562-202		78562-624	

Disc and Sheet Membrane

Mixed Cellulose Esters (MCE) Membrane



MICRON
NC (MCE)
Membrane Sep



GVS Mixed Cellulose Esters (MCE) Filtration Membrane is an unsupported, hydrophilic membrane. Its rapid flow rate and high throughput make it ideal for use in diagnostic kit manufacturing applications.

Characteristics

- High flow rate: fast filtration rates
- Uniform pore structure: consistent flow and diffusion rates
- Lot-to-lot consistency

Typical Applications

- Aqueous filtration
- Sterility testing
- Gravimetric analysis with ashing technique
- Microbiological and particulate analysis
- Black for food and beverage applications

Consistent Uniformity Improves Control and Performance

GVS MCE Filtration Membranes are composed of a mixture of inert cellulose nitrate and cellulose acetate polymers. The uniform microporous structure of these filters provides the fastest flow rates and highest throughputs available in

a membrane filter. Because they are biologically inert, GVS MCE Filtration Membranes are ideal for a wide range of clarification, sterilization and analytical applications such as: microbiological analysis, clarification or sterilization of aqueous solutions, industrial hygiene applications, silt density index and particulate-matter analysis. For gravimetric analysis using ashing techniques, GVS MCE Membranes yield a residue or less than 0.045% of their initial weight. They are hydrophilic with a noncytotoxic wetting agent and yield extractable levels of less than 4% of their weight. These membranes are autoclavable at 121°C (250°F) for 20 minutes. Sterilized product lifetime is 24 months from sterilization date.

Product Characteristics

Sterilization	Gamma Irradiation or Ethylene Oxide (EtO)
USP Class VI testing	Passed
Thickness	100 - 190 µm
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency and Insert Molding
Pore Size Range	0.1 to 8.0 µm
BSA Protein Binding	Approx. 160 µg/cm ² (depending on pore size)
Maximum Operating Temperature	356°F (180°C)

Performance

Pore Size (µm)	Flow Time (s)	Volume/Vacuum (mL/in Hg)	Flow Rate (mL/min/cm ² @ 10psi)	Bubble Point (psi)
0.1	198-263	250/20	6.05-8.03	80-110
0.22	60-136	250/20	11.70-26.51	52-65
0.45	23-46	250/20	34.58-69.16	30-42
0.65	13-35	250/20	45.45-122.36	25-42
0.8	5-18	250/20	88.37-318.13	11-19
1.2	30-80	500/5	159-424	9-18
5.0	13-36	500/5	353-979	6-15
8.0	3-25	500/5	509-4242	4-11

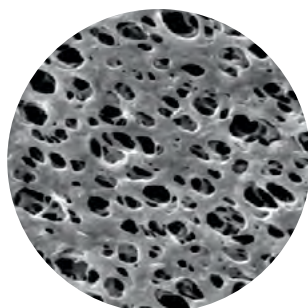
Ordering information - Cellulose Mixed Esters - Non sterile, white and black

Dimensions	47 mm	47 mm Gridded	293 mm	47 mm Gridded
Packaging	100/pk	100/pk	25/pk	100/pk
Color	white	black	white	black
Pore sizes	0.22 µm	490007-478	78173-102	
	0.45 µm		78173-322	78173-322
	1.2 µm	78893-442		
	8.0 µm	78172-404		3053377

Note: for other sizes membrane, please contact local representatives.

Disc and Sheet Membrane

Nylon 66 (NY) Membrane



MAGNA
Nylon Membrane

Description and Use

GVS Nylon Filtration Membrane is a supported, naturally hydrophilic membrane designed to wet out evenly and retain its superior strength during use in general filtration or medical assays.

Versatile Capabilities, Consistent Performance

GVS Nylon Filtration Membrane is internally supported with an inert polyester support web giving it added dimensional strength and stability that prevents cracking, tearing, curling and breaking. This added strength and durability is advantageous during usage that involves aggressive handling or automated equipment.

A naturally hydrophilic membrane, GVS Nylon Filtration

Membrane does not require wetting agents that can interfere with biological processes.

Features & Benefits

- Hydrophilic: Eliminates the need for wetting agents that can potentially interfere with biological processes
- Super strength: Eases handling when used with automated equipment
- Low extractables: Ensures tests will be clean and pure leading to more consistent results
- Lot-to-lot consistency: Quality checks ensure lot-to-lot consistency, both down and across the polyester web, for dependable results every time

Typical Applications

- Sterilization and clarification of aqueous and organic solvent solutions
- HPLC sample preparation

Product Characteristics

Sterilization	Steam, Gamma Irradiation or Ethylene Oxide (EtO)
USP Class VI toxicity	Passed
Thickness	65 - 125 µm
Maximum Operating Temperature	356°F (180°C)
Sealing Compatibility	Ultrasonics, Heat, Radio Frequency and Insert Molding
Pore Size Range	0.1 to 5 µm

Performance

Pore Size (µm)	Flow Time (s)	Volume/Vacuum (mL/ in Hg)	Flow Rate (mL/min/cm ² @ 10 psi)	Bubble Point (psi)
0.1	300-553	250/20	2.88-5.30	70-100
0.2	113-255	250/20	6.24-14.08	50-72
0.4	44-84	250/20	18.94-36.15	30-45
0.6	18-48	250/20	33.14-88.37	18-32
0.8	13-37	250/20	42.99-122.36	13-28
1.2	40-248	500/5	51-318	11-22
3.0	33-100	500/5	127-386	8-16
5.0	28-57	500/5	223-454	6-13

Disc and Sheet Membrane

Nylon 66 (NY) Membrane, white Ordering information

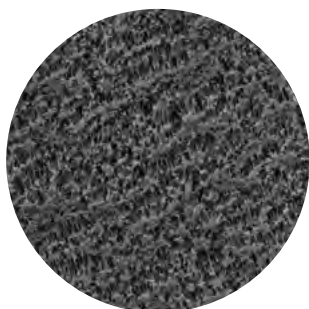
	Dimensions Packaging	13 mm 100/pk	25 mm 100/pk	37 mm 100/pk	47 mm 100/pk	47 mm Gridded 100/pk
Pore sizes	0.1 µm	78562-508	78562-478		78562-098	
	0.22 µm	78172-246	78562-552		78562-440	
	0.45 µm	78172-848	78172-696		78173-292 78562-312*	78562-484 78562-288
	0.65 µm		78562-154		78562-048	
	0.8 µm		78562-032	78562-084	78561-968	78562-492
	1.2 µm		78562-608	78562-604	78562-066	78562-204
	5.0 µm		78562-104		78562-064	78172-290

*sterile, 1000/PK

	Dimensions Packaging	90 mm 25/pk	142 mm 25/pk	293 mm 25/pk	200x200 mm 5/pk	30 cm x3 m 1/pk
Pore sizes	0.1 µm	78562-166	78562-302		78562-522	78562-224
	0.22 µm	78172-578	78172-582	78562-196	78562-426	78562-112
	0.45 µm	78562-394	78561-996	78562-318	78562-450	78172-444
	0.65 µm	78562-380	78562-170		78562-588	78562-506
	0.8 µm	78562-570	78561-982	78562-118	78562-456	
	1.2 µm	78562-138	78562-274	78562-322	78562-296	78562-278
	5.0 µm	78562-546	78562-526	78562-240	78562-212	78562-298

Disc and Sheet Membrane

Polytetrafluoroethylene (PTFE) Membrane



GVS Laminated PTFE filters are made of a polytetrafluoroethylene polymer (PTFE) laminated to a polypropylene support for improved durability and easy handling. These filters are chemically compatible with strong acids and most aggressive solvents such as alcohols.

PTFE (fine powder resin) is expanded into a 3-dimensional web-like structure called PTFE which creates billions of microscopic pores. This structure utilizes the inherent hydrophobic (water-resistant) and non-stick nature of PTFE to allow removal of particulate captured on the

membrane surface. This allows air to pass easily through the membrane while collecting particulate as small as 0.1 micron on its surface. PTFE membranes provide 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.

Inherently hydrophobic, PTFE membranes will not absorb moisture from air or gases, making it ideal for venting applications, phase separations and aerosol samplings.

Laminated PTFE filters can be used to filter aqueous solutions when prewetted with methanol.

They are autoclavable up to 130°C (260°F).

Features & Benefits

- Naturally hydrophobic
- Compatible with strong acids and aggressive solutions
- Improved durability and handling
- Autoclavable

Typical Applications

- Filtration of strong acids and aggressive solutions
- Venting applications
- Phase separations
- Aerosol samplings

Performance

Pore Size (µm)	Bubble Point (EtOH) (kPa)	Flow Time (MeOH) (sec)	Thickness (µm)
0.22	107.9 -152.0	80 -140	100 -180
0.45	63.7-103.0	40 - 75	100 -180

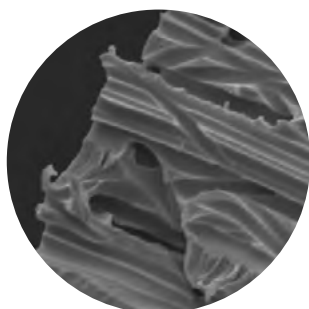
Ordering information

Pore sizes	Dimensions Packaging	6.5mm 100/pk	13 mm 100/pk	25 mm 100/pk	47 mm 100/pk
	0.22 µm		78562-026	78173-552	78172-940
	0.45 µm	1238210	78562-248	78172-882	78173-586
	1.0 µm			78173-218	78562-374

Pore sizes	Dimensions Packaging	90mm 25/pk	142 mm 25/pk	200x200 mm 5/pk	305x305 mm 50/pk
	0.22 µm	78561-970	78562-490	78562-622	78561-986
	0.45 µm	78562-230	78562-200	78562-554	78561-960
	1.0 µm	78562-358	78562-420		78562-110

Disc and Sheet Membrane

Polycarbonate Track Etched (PCTE) Membrane



GVS Polycarbonate Track Etched (PCTE) Membrane is made from a thin polycarbonate film with precisely defined pores. It is ideally suited for use in cellular-based filtration assays as well as filtration applications where high purity is required. The membrane is produced through a two-step, proprietary manufacturing process that employs high quality standards. In the first step, polycarbonate film is exposed to ion particles that pass through it. As the ions pass through the film, they create "tracks" where the polymer is damaged. The beamed film is then exposed to a chemical that etches out the tracks creating precise, cylindrical pores. Pore density is controlled by the number of tracks per unit area, and pore size is controlled by varying the temperature, strength and time of exposure to the etching solution. This unique process allows for increased control over pore size and density to ensure the physical properties of each membrane precisely fit your specifications. The resulting membrane is a thin, translucent polycarbonate film with a smooth, flat surface. All particles larger than the pore size are captured on its surface.

GVS offers a unique solution for Legionella analysis following the new standard UNI EN ISO 11731. Our sterile gridded membranes are suitable for this test and give you the best performances.

Nominal Product Characteristics

Thickness	5 - 20 μm
Refractive Indices	Birefringent at 1.584 and 1.625
Water Adsorption (% wt. gain 24-hr immersion)	0.24%
Residual Ash Weight Average	0.92 $\mu\text{g}/\text{cm}^2$
Specific Gravity	0.94-0.97
Autoclavable	Yes
Leachables	Negligible
Wetting Characteristics	Hydrophilic or Hydrophobic
Wetting Agent (hydrophilic)	Polyvinylpyrrolidone (PVP)
Burst Strength Minimum	0.7 bar (10 psi)
Migration of Filter Media	0
Optical Properties	Semi-translucent

GVS offers the PCTE Membrane for AOX use (adsorbable organic halogens) with exceptionally low protein-binding/extractable levels and precisely defined pores. These AOX -certified polycarbonate (PCTE) membranes are ideally suited for the detection of man-made pollution in groundwater and wastewater (organic halide adsorption determination).

To optimize the suitability of PCTE, we offer a variety of products with unique characteristics:

PVP (polyvinylpyrillidone)-treated for a hydrophilic membrane

AOX-certified for applications requiring extremely low extractables

Black-dyed membrane for staining applications

PVP-free for a hydrophobic membrane

Characteristics

- Absolute pore size and density allows for precise size separation
- Direct thickness and pore size measurements provide accurate characteristics
- Smooth, thin, glass-like surface is suitable for microscopy and cellular applications
- Superior strength allows for aggressive handling
- Low protein binding ensures clean results
- Resists chemical staining to ease microscopic visualization
- Passes USP VI Class toxicity testing for use

Typical Applications

- General filtration
- Legionella test (UNI EN ISO 11731_2017)
- Removal of red blood cells from plasma
- Flow control of reagents through assays
- Precise filtration and prefiltration
- Fuel testing
- Cytology
- Microscopy

Product Characteristics

Sterilization	Gamma Irradiation or Ethylene Oxide (EtO)
USP Class VI Testing	Passed
Extractables	Very Low
BSA Protein Binding	5 $\mu\text{g}/\text{cm}^2$
Maximum Operating Temperature	284°F (140°C)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency and Insert Molding
Pore Size Range	0.05 to 20 μm

Disc and Sheet Membrane

Performance Characteristics

Pore Size (a) (µm)	Pore Density (b) (pores/cm ²)	Nominal Thickness (c) (µm)	Min. Bubble Point (d) (psi)	Typical Flow Rates		
				Water (e) (mL/min/cm ²)	Air (L/min/cm ²)	
20	4 x 10 ⁴	3	1	1000	11 (g)	(a) Tolerance + 0%, -20%
14	5 x 10 ⁴	6	0.2	1400	63.5 (g)	(b) Tolerance + / - 15%
12	1 x 10 ⁵	8	0.4	1250	63.5 (g)	(c) Tolerance + / - 10%
10	1 x 10 ⁵	10	0.5	1150	34.5 (g)	(d) Measured using Isopropanol (IPA)
8	1 x 10 ⁵	7	0.7	1000	30 (g)	(e) Initial flow rates using prefiltered water at 10 psid (0.7 kg/cm ²)
5	4 x 10 ⁵	10	1.2	700	30 (g)	(f) Initial flow rates using prefiltered air at 10 psid (0.7 kg/cm ²)
3	2 x 10 ⁶	9	2	440	37.5 (g)	(g) Initial flow rates using prefiltered air at 5 psi (0.35 kg/cm ²)
2	2 x 10 ⁶	10	3	300	16.5 (f)	
1	2 x 10 ⁷	11	6	130	20 (f)	
0.8	3 x 10 ⁷	9	7	90	18 (f)	
0.6	3 x 10 ⁷	9	9	60	7.5 (f)	
0.4	1 x 10 ⁸	10	12	33	7.5 (f)	
0.2	3 x 10 ⁸	10	20	10	3 (f)	
0.1	4 x 10 ⁸	6	30	2.5	1.5 (f)	
0.08	4 x 10 ⁸	6	38	0.6	0.75 (f)	
0.05	6 x 10 ⁸	6	50	0.4	0.37 (f)	
0.03	6 x 10 ⁸	6	NA	0.2	0.075 (f)	
0.01	6 x 10 ⁸	6	NA	0.1	0.0075 (f)	

PCTE Hydrophilic Black Membrane

Ordering information

Pore sizes	Dimensions Packaging	25 mm 100/pk	47 mm 100/pk
	0.2 µm	78172-744	
	2 µm	78173-278	
	5 µm		78893-430

PCTE Hydrophilic Membrane - Sheets and Rolls

Ordering information

Pore sizes	Dimensions Packaging	203x254 mm 30/pk	300x3000 mm 1/pk
	0.2 µm	78173-282	78893-452
	0.8 µm	78173-406	
	20 µm	78173-094	

PCTE PVP-Free Hydrophobic Membrane

Ordering information

Pore sizes	Dimensions Packaging	25 mm 100/pk	47 mm 100/pk	25x80 mm 50/pk
	0.2 µm	78173-272		
	0.4 µm		78173-050	
	5.0 µm			78173-222

Disc and Sheet Membrane

PCTE Hydrophilic Membrane - Disks

Ordering information

Dimensions Packaging	13 mm 100/pk	19 mm 100/pk	25 mm 100/pk	37 mm 100/pk	47 mm 100/pk
Pore sizes	0.01 µm	78562-190	78562-198		78562-410
	0.03 µm	78562-446	78562-046	78173-620	78562-470
	0.05 µm	78562-184	78562-432	78562-576	78562-332
	0.08 µm	78562-012	78562-034	78172-394	78173-624
	0.1 µm	78173-014	78173-534	78172-834	78562-222
	0.2 µm	78172-320	78172-642	78172-826	78172-534 78173-670*
	0.4 µm	78172-700	78172-406	78172-646	78562-568 78172-468
	0.6 µm	78562-458		78173-360	78173-152
	0.8 µm	78172-790	78562-328	78172-736	78172-552
	1 µm	78172-884	78173-180	78172-632	78172-372
	2 µm	78562-284		78562-106	78173-340
	3 µm	78173-668		78172-544	78562-090
	5 µm	78172-518		78173-628	78172-374
	8 µm	78173-512		78561-980	78172-960
	10 µm	78173-584		78172-322	78172-358
	12 µm	78173-528		78172-454	78562-014
	14 µm	78562-008		78562-294	78562-364
	20 µm	78172-598		78562-392	78562-140

* white, sterile and single packed for Legionella test

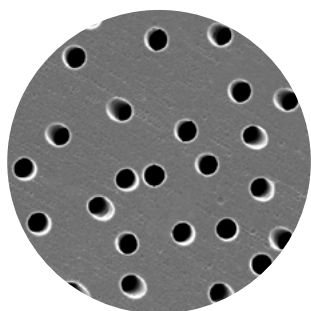
PCTE Hydrophilic Membrane - Disks

Ordering information

Dimensions Packaging	76 mm 30/pk	76 mm 100/pk	90 mm 30/pk	142 mm 20/pk	293 mm 20/pk
Pore sizes	0.05 µm	78562-390	78561-974	78172-572	78562-182
	0.08 µm		78173-112	78173-488	78173-302
	0.1 µm		78562-362	78172-470	78173-008
	0.2 µm		78562-078	78173-440	78172-758 78173-404
	0.4 µm			78172-690	78562-360 78173-352
	0.6 µm	78562-598		78562-550	78562-326 78562-370
	0.8 µm	78562-316		78562-242	78562-482 78561-962
	1 µm		78562-044	78172-932	78172-412 78173-036
	2 µm			78173-098	78562-080 78562-494
	3 µm			78172-606	78562-210 78562-574
	5 µm			78562-610	78562-408
	8 µm			78172-528	78562-270
	10 µm		78562-308	78562-218	78562-276 78562-334
	12 µm			78562-030	
	14 µm			78562-214	

Disc and Sheet Membrane

Polyester Track Etched (PETE) Membrane



GVS PETE Membrane is made from a thin polyester film with a high density of solvent resistance. It is ideal for use in blood assays or general filtration where chemically aggressive solvents may be used. The membrane is produced through a two-step proprietary manufacturing process similar to that of the PCTE membrane. In the first step, polyester film is exposed to ion particles that pass through the film. As the ions pass through the film, they create "tracks" where the polymer is damaged. The beamed film is then exposed to a chemical solution which etches out the tracks creating precise, cylindrical pores. Pore density is controlled by the number of tracks per unit area, and pore size is controlled by varying the temperature, strength and time of exposure to the etching solution. This unique process allows for increased control over pore size and density to ensure

Product Characteristics

Sterilization	Gamma Irradiation or Ethylene Oxide (EtO)
USP Class VI Testing	Passed
Thickness	10 - 20 μm
Extractables	Low
BSA Protein Binding	< 5 $\mu\text{g}/\text{cm}^2$
Maximum Operating Temperature	284°F (140°C)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency and Insert Molding
Pore Size Range	0.2 to 10 μm

Performance Characteristics

Pore Size (a) (μm)	Pore Density (b) (pores/ cm^2)	Nominal Thickness (c) (μm)	Min. Bubble Point (d) (psi)	Typical Flow Rates	
				Water (e) (mL/min/ cm^2)	Air (L/min/ cm^2)
10	1 x 10 ⁵	9	0.5	1150	34.5 (g)
8	1 x 10 ⁵	7	0.7	1000	30 (g)
5	4 x 10 ⁵	10	1.2	700	30 (g)
3	2 x 10 ⁶	9	2	440	37.5 (g)
2	2 x 10 ⁶	10	3	300	16.5 (f)
1	2 x 10 ⁷	11	6	130	20 (f)
0.8	3 x 10 ⁷	9	7	90	18 (f)
0.6	3 x 10 ⁷	9	9	60	7.5 (f)
0.4	1 x 10 ⁸	10	12	33	7.5 (f)
0.2	3 x 10 ⁸	10	20	10	3 (f)

(a) Tolerance + 0%, -20%
 (b) Tolerance + / - 15%
 (c) Tolerance + / - 10%
 (d) Measured using Isopropanol (IPA)
 (e) Initial flow rates using prefiltered water at 10 psid (0.7 kg/cm²)
 (f) Initial flow rates using prefiltered air at 10 psid (0.7 kg/cm²)
 (g) Initial flow rates using prefiltered air at 5 psi (0.35 kg/cm²)

the physical properties of each membrane precisely fit your specifications. The resulting membrane is a thin, translucent polyester film with a smooth, flat surface containing pores of controlled diameter and number. The membrane has better solvent resistance than polycarbonate and captures all particles larger than the precisely controlled pore size on its surface.

Characteristics

Broad range of chemical compatibility for a wide range of applications
 Direct thickness and pore size measurements ensure accurate characteristics
 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

Typical Applications

- General filtration
- Removal of red blood cells from plasma
- Flow control of reagents through assays
- Precise filtration and prefiltration
- Air analysis
- Filtration of aggressive solutions
- Cellular assays and diagnostics
- Trace element analysis

Nominal Product Characteristics

Water Adsorption (% wt. gain 24-hr immersion)	0.24%
Residual Ash Weight Average	0.92 $\mu\text{g}/\text{cm}^2$
Specific Gravity	0.94-0.97
Autoclavable	Yes
Leachables	Negligible
Wetting Characteristics	Naturally Hydrophilic
Burst Strength Minimum	0.7 bar (10 psi)
Migration of Filter Media	0
Optical Properties	Semi-translucent

Pore sizes	Dimensions Packaging	25 mm 100/pk	47 mm 100/pk	142 mm* 20/pk
0.4 μm		78893-448		78172-588
1.0 μm			78893-436	
3.0 μm			78893-444	
5.0 μm			78893-450	
10 μm			78893-432	

*Bulk packaging available

Disc and Sheet Membrane

Quantitative Filter Paper

1. Ashless filter paper for quantitative analysis



These GVS filter papers are used for quantitative analysis and designed for preparation of samples and gravimetric analysis. They are made of refined pulp and linters with virtually 100% of alpha-cellulose content. These filter papers are guaranteed free of possible residual acids used in some production methods.

Extremely low percentage of ash content (maximum ash content of <0.007%).

DSL45 GRADE – Very fast filtration

Filter paper of very high rate of filtration, wide-pored, soft, spongy structure, extremely low-ash content.

Food industry applications: determination of ash contents and PCB determination in foodstuffs.

Beverage industry applications: processing (ashing) fruit juice samples for photometric determinations (e.g. phosphate).

Environmental analysis: Determination of filterable substances and the residue on ignition (dry weight) for the examination of water, wastewater and sludge (DIN 38 409 part 2).

DFA41 GRADE – Fast filtration

Fast ashless filter paper in the GVS quantitative range together with DSL45.

It is particularly suitable for analytical procedures and tests involving large particles or gelatinous precipitates (e.g. metal hydroxides and sulphides).

It is also used in metal (Pb) tests in water testing analysis, quantitative air pollution analysis, food industry, paper industry, etc.

DME43 GRADE – Medium filtration

Ashless filter paper with medium filtration speed and good retention (between Grade DMS40 and Grade DFA41) of medium and thick particles.

Suitable for gravimetric measurements of gypsum/lime suspensions in power plants.

DME43 Grade is particularly applied in metallurgical industry laboratories for metal tests. Typical applications include foodstuffs analysis, soil analysis, particle collection in air pollution monitoring, COD and TOC determination, inorganic analysis in the construction, mining and steel industries. They are also used for Blaine test in the cement industry (standards UNE 80-112-91 and EN 196-6), and to carry out other chemical analysis on cement.

DMS40 GRADE – Medium-slow filtration

The classic general purpose ashless filter paper with a medium-to-slow filtering rate.

Suitable for typical applications which includes gravimetric analysis for numerous components and for all kind of pre-filtrations.

Used as a primary filter for separating solid matter from aqueous extracts, in tests for fat and oil in water, in general soil analysis, quantitative determination of sediments in milk, as well as in analytical grade clean-up filter for solutions prior to AA spectro-photometry. Suitable for finer precipitates such as hot barium sulphate.

DSL44 GRADE – Slow filtration

A thinner version of DXS42 Grade but with a higher flow rate (twice as fast as DXS42 Grade).

Very fine particles but with lower ash weight per sample

DXS42 GRADE – Very slow filtration

An ashless world standard filter for critical gravimetric analysis. With slow filtering rate and fine particle retention.

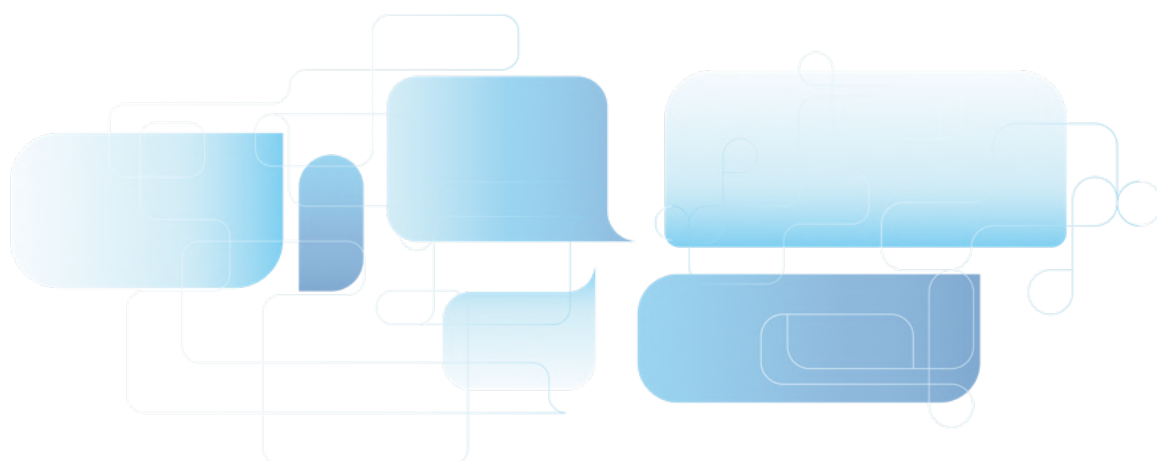
Typical analytical precipitates such as cold barium sulphate, lead sulphate, zinc and nickel sulphides, etc.

Disc and Sheet Membrane

Grade	Applications
DSL45	Filtration of coarse and voluminous precipitates such as iron hydroxide, aluminium hydroxide and chromium hydroxide Silica content determinations in steel and iron Food and beverage analysis
DFA41	Food analysis Soil analysis Determination of metals in water Filtration of lead sulphide, iron sulphide, silver sulphide and alkali carbonates Blaine test in the cement industry (standards UNE 80-112-91 and EN 196-6)
DME43	Filtration of medium size particles Precipitates such as calcium oxalate, magnesium ammonium phosphate, and barium sulphate Blaine test in the cement industry (standards UNE 80-112-91 and EN 196-6)
DMS40	Fine precipitates CaC_2O_4 , PbSO_4 , BaSO_4 (precipitates)
DSL44	Filtration of fine precipitates such as barium sulphate and cuprous oxide Soil analysis: measurement of soluble sulphates
DXS42	Critical analytical filtration conditions Fine precipitates Precipitates such as cold barium sulphate, lead sulphate, zinc and nickel sulphides, etc

Product Characteristics

	Grade	Filtration Speed	Weight (g/m ²)	Thickness (μm)	Retention Range (μm)	Ash Content (%)
●	DSL45	Very Fast	85	210	25-30	<0.007
○	DFA41	Fast	85	190	20-25	<0.007
●	DME43	Medium	85	180	14-17	<0.007
●	DMS40	Medium-Slow	85	170	7-9	<0.007
●	DSL44	Slow	85	160	2-4	<0.007
●	DXS42	Very Slow	100	160	2-3	<0.007



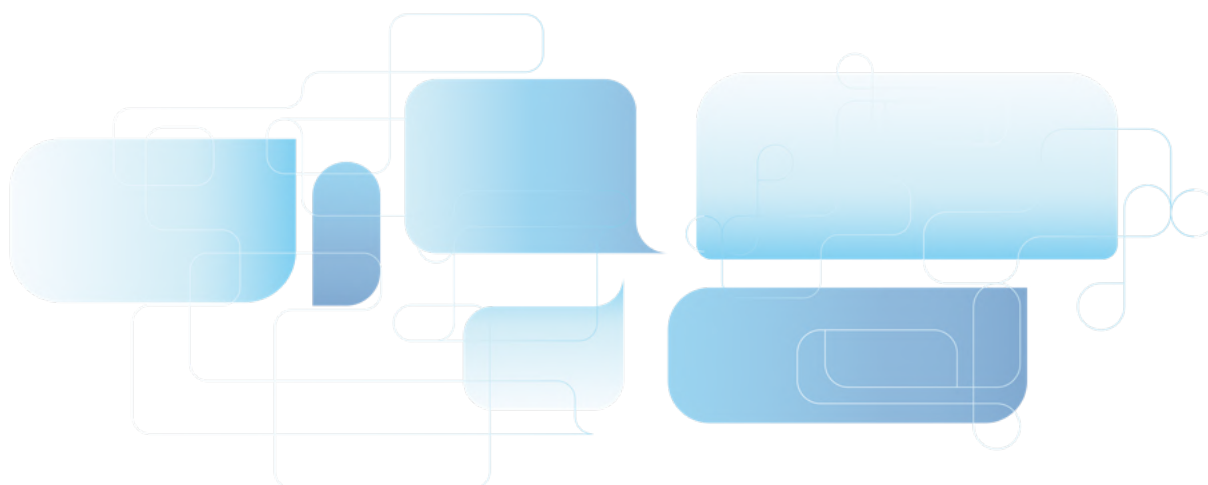
Disc and Sheet Membrane

Ordering information

Diameter (mm)	DSL45	DFA41	DME43	DMS40	DSL44	DXS42
100 Circles/Box						
37	78172-766					
42.5	78173-134	78173-578	78172-962	78173-662	78172-330	78172-250
47	78173-150	78172-710	78173-000	78172-672	78172-604	78172-442
55	78172-224	78173-342	78172-802	78172-296	78172-324	78173-338
70	78172-908	78173-450	78172-382	78173-366	78172-994	78172-630
90	78172-864	78172-924	78562-584	78173-458	78172-514	78172-930
110	78172-786	78173-554	78172-496	78172-794	78172-388	78173-290
125	78173-124	78172-446	78173-052	78173-618	78173-380	78172-242
150	78172-872	78172-614	78562-220	78173-174	78172-592	78173-638
185	78173-072	78173-592	78562-516	78172-294	78173-286	78172-348
240	78173-616	78172-984	78173-640	78173-692	78562-504	78173-518
320	78172-478	78562-074	78172-868	78173-392	78173-294	78173-190

Equivalence Table

GVS	Filtration Speed	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
DSL45	Very fast	-	589/1	640we	388
DFA41	Fast	41	589/2	640w	389
DME43	Medium	43	589/5	640m	392
DMS40	Medium-slow	40	589/6	640md	390
DSL44	Slow	44	589/3	640d	391
DXS42	Very slow	42	-	640de	393



Disc and Sheet Membrane

Quantitative Filter Paper

2. Ashless hardened filter paper for quantitative analysis

Ashless hardened Filter papers are acid hardened which reduce the ash content to an extremely low level.

These filters are produced by a complex elaborate washing process under stringently controlled conditions. Firstly, acid washing is arranged. Then a series of washes in demineralised water come, which increase the strength of the paper, therefore making them particularly suitable for Büchner filter funnels and a wide range of critical analytical filtration operations.

Through this process, a maximum ash content of <0.006% is attained, which means that no contaminants are introduced when filtering. Also, full compliance with international standards on this subject is achieved.

Thanks to the hardened texture, they are often used when the analyst must recover the precipitates retained on the filter surface.

DF541 GRADE - Fast filtration

Hardened ashless filter paper with a fast flow rate. Preferably used for the filtration of coarse flocculent and bulky precipitates (as aluminium, chromium or hydroxides of iron, bismuth, cobalt, sulphides of copper, various organic metal precipitates, etc.) and gelatinous precipitates in acid/alkaline solutions during gravimetric analysis.

DF540 GRADE - Medium filtration

Hardened ashless filter paper with medium retention and flow rate.

Extremely strong and pure. With a hard surface, it is recommended for filtering medium-sized precipitates such as most metal sulphides.

High chemical resistance. Used in the gravimetric analysis of metals in acid and slightly alkalinized solutions, pressure filtration.

DF542 GRADE - Slow filtration

Hardened ashless filter paper with high retention and slow flow rate.

High chemical resistance. Often used for filtering very fine precipitates and in gravimetric metal determinations.

Grade	Applications
DF541	Food analysis Fibre detection in pet food Filtration of coarse flocculent and bulky precipitates (as aluminium, chromium or hydroxides of iron, bismuth, cobalt, sulphides of copper, various organic metal precipitates, etc.) Gravimetric analysis of gelatinous precipitates in acid/alkaline solutions
DF540	Filtration of fine crystalline precipitates Gravimetric analysis of metals in acid/alkaline solutions
DF542	Filtration of very fine precipitates Gravimetric metal determinations

Product Characteristics

GVS	Filtration Speed	Weight (g/m ²)	Thickness (µm)	Retention Range (µm)	Ash Content (%)
DF541	Fast	84	170	20-25	<0.006
DF540	Medium	84	160	7-12	<0.006
DF542	Slow	95	150	2-4	<0.006

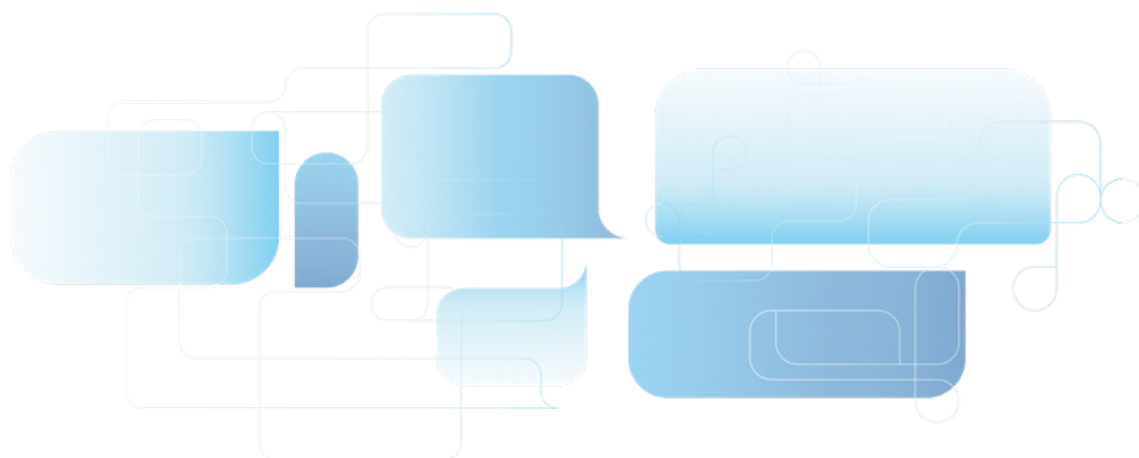
Disc and Sheet Membrane

Ordering information

Diameter (mm)	DF541	DF540	DF542
100 Circles/Box			
25	78172-300	78173-058	78173-148
40.5	78173-382	78173-126	78172-542
42.5	78172-894	78562-542	78172-898
47	78173-522	78562-572	78173-252
55	78172-494	78562-158	78562-028
70	78173-260	78562-372	78173-566
90	78172-524	78562-438	78172-968
110	78172-422	78562-512	78172-346
125	78173-068	78562-148	78172-368
150	78173-040	78172-886	78173-490
185	78172-392	78562-264	78172-912
240	78172-450	78562-134	78172-852
320	78173-444	78562-232	78562-116

Equivalence Table

GVS	Filtration Speed	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
DF541	Fast	541	1505	1640w	1388
DF540	Medium	540	1506	1640m	1392
DF542	Slow	542	1507	1640de	1391



Disc and Sheet Membrane

Qualitative Filter Paper

1. Ashless hardened filter paper for qualitative analysis



These filter papers are used for qualitative analysis. Qualitative filters are made of refined pulp and pure cotton linters with an alpha-cellulose content of nearly 100%, which gives them a number of diverse filtration properties.

The ash content of less than 0.06% is not reduced by post-treatment. Qualitative filter papers are available in sheets, discs and folded filters.

DXF04 GRADE - Very fast filtration

Very high rate of filtration with excellent retention of coarse precipitates such as metal hydroxides and sulphides or gelatinous substances.

Preferably used as rapid filter for various organic metal precipitates, routine cleanup of biological fluids, food industry analysis, air pollution monitoring (high rates and the fine particles collection is not critical).

DME07 GRADE - Fast filtration

A standard grade filter used for a wide variety of analytical routine applications in different industries. These cellulose filters are used in qualitative analytical techniques to determine and identify materials. Pre-pleated qualitative filters are also available, which give improved flow rate and increased loading capacity compared to equivalent flat filters.

DME01 GRADE - Medium filtration

The most widely used filter paper in the GVS range.

Medium retention and flow rate. This grade covers a wide range of laboratory applications and is frequently used for clarifying liquids. Traditionally this grade is used in qualitative analytical separations for routine laboratory work as well as rapid filtration of fine precipitates such as lead sulphate, calcium oxalate (hot) and calcium carbonate.

In agriculture, it is used for soil analysis and seed testing procedures.

In the food industry, Grade DME01 is used for numerous routine techniques to separate solid foodstuffs from associated liquid or extracting liquid.

It is widely used in education for teaching simple qualitative analytical separations.

In air pollution monitoring, using circles or rolls, atmospheric dust is collected from airflow and the stain-intensity measured photometrically.

For gas detection, the paper is impregnated with a chromogenic reagent and color formation quantified by optical reflectance.

DMS02 GRADE - Medium-slow filtration

Slightly more retentive and absorbent than Grade DME01 and therefore with a moderate to slow filtration speed.

In addition to general filtration this grade DMS02 is used for monitoring specific contaminants in the atmosphere, filtration of fine precipitates, soil testing, it is often used as a folded filter in an analytical funnel.

DMS03 GRADE - Medium-slow filtration (thick)

Medium to low rate of filtration with double the thickness comparing with GVS Grade DME01.

Fine particle retention and excellent loading capacity.

The extra thickness gives increased wet strength and allows a higher solute loading.

Preferably used for liquids hard to clarify, essences, oils, tinctures.

DNS06 GRADE - Slow filtration

Similar particle retention as Grade DXS05 with higher filtration speed.

Often used for boiler water analysis.

DXS05 GRADE - Very slow filtration

Lowest rate of filtration in the GVS qualitative range and maximum degree of fine particle filtration or retention.

Preferably used as a clarifying filter for cloudy suspensions and water and soil analysis. Particularly used in difficult filtration conditions and extra fine-grained precipitates such as barium sulphate, cupreous oxide, often specified for clarification of wine.

Disc and Sheet Membrane

Grade	Applications
DXF04	Coarse and gelatinous precipitates such as iron hydroxide, aluminium hydroxide and chromium hydroxide Silica determination in steel and iron analysis Food analysis Monitoring of air pollution when the collection of fine particles is not critical Routine clean-up of biological fluids or organic extracts
DME07	Filtration of a wide range of routine laboratory applications Food analysis. Determination of fat content Beverage analysis. Removal of carbon dioxide and turbidity from beer and other beverages
DME01	Filtration of a wide range of routine laboratory applications for medium retention Filtration of fine precipitates such as lead sulphate, calcium oxalate, calcium carbonate and other metal sulphates Soil analysis and seed testing Food analysis Education Used in the beer and malt control quality production according to EBC.
DMS02	Monitoring specific contaminants in the atmosphere Filtration of fine precipitates such as lead dioxide, calcium fluoride, nickel sulphide and zinc sulphide Soil analysis
DMS03	Particularly useful for use in Büchner funnels Preferably used for liquids hard to clarify, essences, oils and tinctures
DNS06	Filtration of very fine crystalline precipitates Beverage analysis. Sample preparation and removal of carbon dioxide for beverages Monitoring specific contaminants in the atmosphere Soil analysis
DXS05	Filtration in very difficult conditions Filtration for extra fine-grained precipitates such as barium sulphate, cupreous oxide often specified used for clarification of wine

Product Characteristics

GVS	Filtration Speed	Weight (g/m ²)	Thickness (µm)	Retention Range (µm)	Ash Content (%)
DXF04	Very fast	84	190-230	12-15	<0.06
DME07	Fast	84	190-230	8-12	<0.06
DME01	Medium	84	160-190	7-11	<0.06
DMS02	Medium-Slow	97	190	5-8	<0.06
DMS03	Medium-Slow/Thick	200	320	5-7	<0.06
DXS05	Very Slow	80	170	1-2	<0.06

Disc and Sheet Membrane

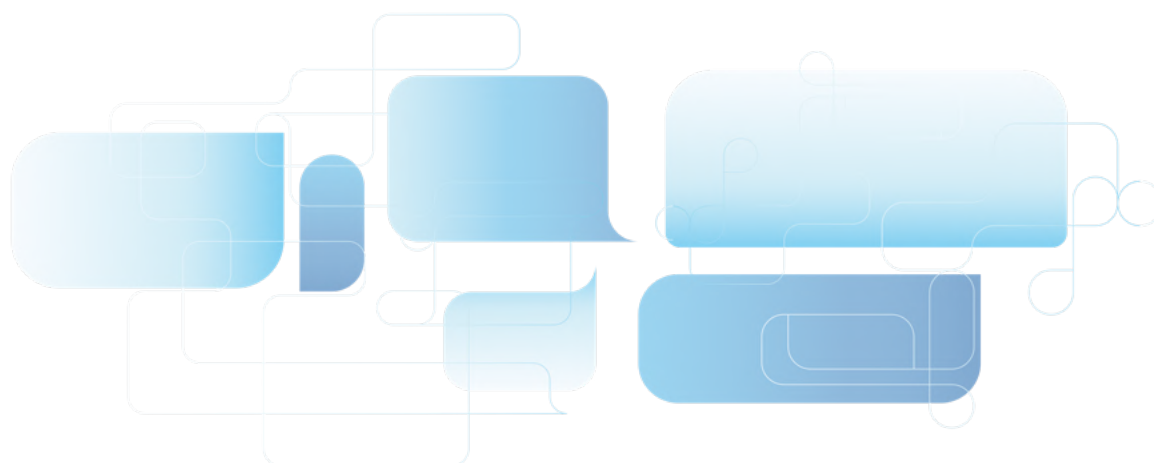
Ordering information

Diameter (mm)	DXF04	DME07	DME01	DMS02	DMS03	DNS06	DXS05
100 Circles/Box							
25					78172-506		
37	78173-224	78172-904	78172-788		78172-688		
42.5	78173-350	78562-042	78172-498	78173-010	78172-240		78172-900
47	78172-732	78562-348	78173-698	78172-342	78172-870		78172-636
55	78173-066	78173-348	78172-996	78173-434	78172-380		78172-462
70	78173-642	78173-572	78172-398	78173-674	78172-668		78172-716
90	78173-230	78172-456	78172-964	78172-354	78173-002		78172-806
110	78173-464	78562-486	78561-992	78172-440	78172-558		78172-370
125	78173-056	78562-262	78173-136	78172-596	78173-630		78173-184
150	78172-828	78173-306	78173-326	78172-476	78172-948		78173-046
185	78172-926	78173-084	78561-972	78172-256	78173-466	78172-244	78172-492
240	78173-590	78172-274	78173-594	78172-862	78172-570		78173-700
320	78173-666	78173-316	78562-256	78172-288	78173-402		78173-062

Note: for folded format or other sizes packaging, please contact local representatives.

Equivalence Table

GVS	Filtration Speed	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
DXF04	Very fast	4	604	1670/617	288
DME07	Fast	-	597	-	289
DME01	Medium	1	593/595	616/615	292
DMS02	Medium-slow	2	-	616md	292a
DMS03	Medium/thick	3	591	618	3 S/h
DXS05	Very slow	5	602eh	619de	293



Disc and Sheet Membrane

Qualitative Filter Paper

2. General-purpose qualitative filter paper

These general-purpose filters have a high wet strengthened.

They are made of high-purity cotton linters and other virgin fibers. These filter papers have either fast or very fast filtration rates, and are particularly useful in filtering coarse precipitates or relatively straightforward substances.

DME93 GRADE - Very fast filtration

Smooth Grade DME93 is a general-purpose filter paper for qualitative analysis.

This wet strengthened paper is used for general filtration and sample preparation for food, sugar processing plants, hospitals, educational and research centres, colleges, universities and labs (with a very high usage and less critical analysis), etc.

DXF55 GRADE - Very fast filtration

General-purpose filter paper, smooth and similar to DME93 with less weight.

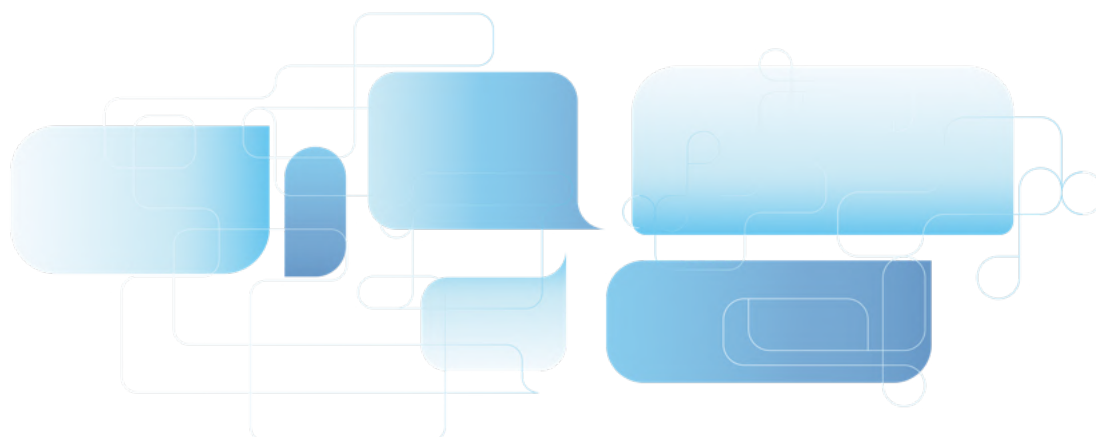
DME91 GRADE - Very fast filtration. Crêped

Crêped surface filter paper with a very fast flow rate.

For general laboratory use in less-critical analyses.

Used around the world in laboratories to assay sugar cane or beet. The fruit is mashed and further analyzed according to the aluminium sulphur method.

Grade	Applications
DME93	General filtration and sample preparation in different kind of laboratories General filtration and sample preparation in food and sugar processing plants
DXF55	General-purpose filtration
DME91	Determination of sucrose in the sugar cane or beet



Disc and Sheet Membrane

Product Characteristics

GVS	Filtration Speed	Weight (g/m ²)	Thickness (μm)	Retention Range (μm)	Ash Content (%)
DME93	Very Fast	80	170	43-48	<0.1
DXF55	Very Fast	65	145	6-9	<0.1
DME91	Very Fast/Crêped	65	160	34-42	<0.1

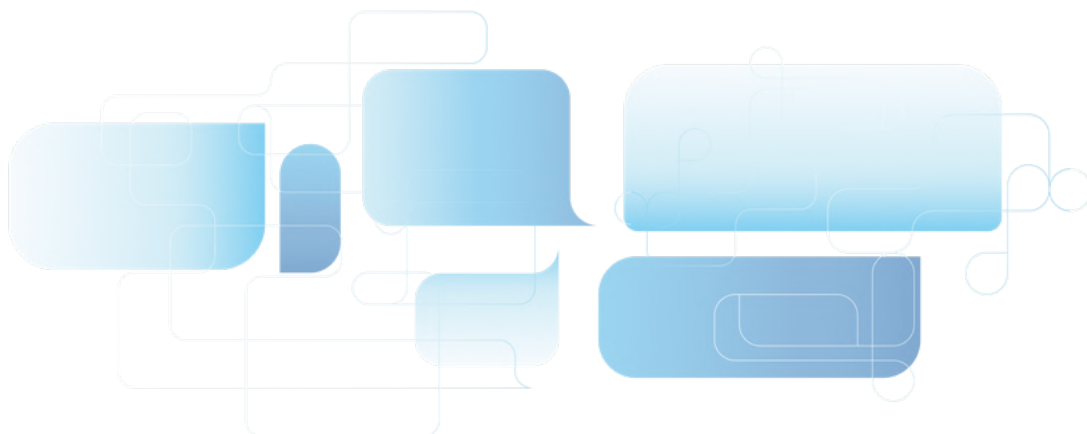
Ordering information

Diameter(mm)	DME93	DXF55	DME91
100 Circles/Box			
37	78173-478		78172-432
42.5	78172-620		78172-466
47	78173-372		78172-564
55	78173-216		78172-800
70	78172-480		78173-514
90	78562-268		78173-336
110	78172-452	78173-498	78172-362
125	78172-782	78172-804	78172-764
130		78173-660	
150	78172-998	78173-546	78172-770
185	78173-486	78173-206	78173-334
200		78172-822	
240	78173-516	78172-970	78172-328
250		78173-254	
270		78173-470	
300		78172-386	
320	78172-236	78172-486	78562-228

Note: for folded format or other sizes packaging, please contact local representatives.

Equivalence Table

GVS	Filtration Speed	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
DME93	Very fast	93	860	617	4b
DXF55	Very fast	-	-	-	3m/N
DME91	Very fast/Crêped	91	0856	-	601/N



Disc and Sheet Membrane

Special Filter Papers

1. Filter paper with diatomaceous

Filter paper with low filtration speed. Made with a mixture of cellulose fibers and diatomaceous soils (diatomaceous algae), the main property is its microporous structure, up to 0.5 μm .

The land production process begins with open pit mining. Subsequently, a drying phase follows and it is subjected to high temperatures to eliminate any remaining residue. Finally, it is crushed for industrial use.

This filter paper combines excellent retention of very fine or semi-colloidal particles with a faster filtration speed than any slow filtration cellulose filter paper.

Applications

Filtration of samples for spectrophotometric analysis

Clay samples

Separation of samples with Cu oxides

Protein samples

Product Characteristics

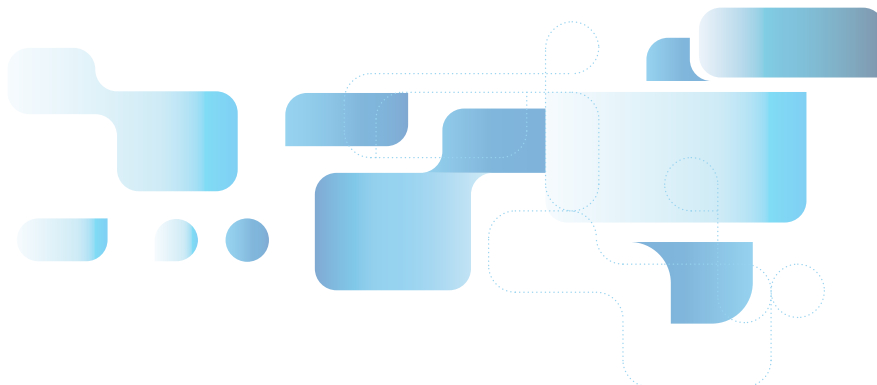
GVS	Filtration Speed	Weight (g/m ²)	Thickness (μm)
DMS60	Slow	140	320

Ordering information

Diameter(mm)	Product Code	Quantity/Box
150	78173-138	100
185	78172-594	100
240	78173-418	100

Equivalence Table

GVS	Filtration Speed	Equivalent 1	Equivalent 2
DMS60	Slow	287	MN660



Disc and Sheet Membrane

Glass Microfiber Filters

GVS offers a wide range of glass microfiber filters made of 100% borosilicate glass fibers with and without binders. The depth structure of the filter's large surface area, provides an outstanding impurity retention capacity combined with a low filter resistance. Glass fiber filters adsorb the finest particles down to 1 μm from liquids and <1 μm in air and gases (even aerosols with this particle diameter are separated), as the electrostatic interaction between the glass fibers and gases is better than between glass fibers and liquids. Temperature resistant up to 500°C (in the case of organic binders up to 180°C).

1. Glass microfiber filters without binders

DFAFA GRADE (1.6 μm)

Particularly suited for atmospheric pollution controls, intake controls and ozone level measurements.

This product is used in testing with algae in water, for general water controls and waste water analysis.

Its use for filtering solvents in high-resolution laboratories is recommended.

DAM10 GRADE (1.0 μm)

It is mainly used in membrane pre-filtration and for biochemical assays.

Suitable for filtration of large sample volumes.

DMEFC GRADE (1.2 μm)

This is the most suitable filter to test for solids in suspension in water in accordance with the parameters set by the EN-872:2005 European regulation and American Standard Methods norm 2540D. In general, it is suitable for any work in water control or wastewater analysis, including clarification processes.

Within biochemical tests, it is very useful for analysing carbohydrates, cellular cultures, etc.

DAM27 GRADE (2.7 μm)

The most widespread use of this filter is in membrane pre-filtering.

Its high particle retention ensures that the sample is properly clarified before passing through surface filters (membrane filters).

DSLFF GRADE (0.7 μm)

This is the filter with the highest retention performance of the range. It is particularly suited to filter samples and solvents for HPLC, being this pre-filtration the most important for ensuring the success of the test. It is also suitable for biochemical tests, such as clarifications, protein filtrations, cellular cultures, etc.

DFAAH GRADE (1.5 μm)

Suitable for atmospheric pollution control, particularly in testing for air intake levels. It is also appropriate for wastewater controls, testing for solids in suspension, dissolved solids and volatile matter in accordance with the parameters set by the American Standard Methods norm 2540D.

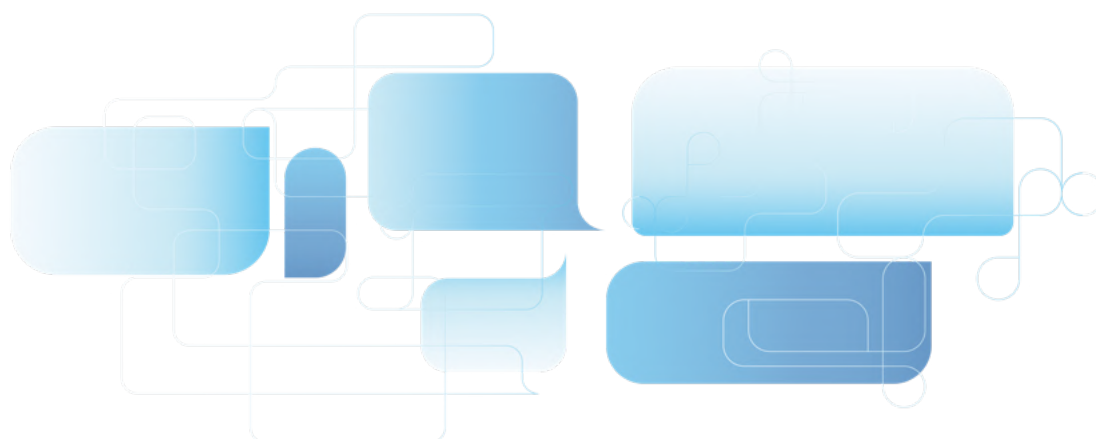
It is also suitable for cellular cultures.

Disc and Sheet Membrane

Grade	Applications
DFAFA	Atmospheric pollution controls, intake controls and ozone level measurements Filtration for algae in water, foodstuff analysis, bacteria cultures, proteins
DAM10	Used in membrane pre-filtration Biochemical assays Suitable for filtration of large volumes
DMEFC	Determination of suspended solids in water in accordance with European regulations Clarification and monitoring water and wastewater analysis Analysis of carbohydrates, cellular cultures in biochemical tests where cellulose fiber is an inconvenience
DAM27	Used as a membrane pre-filter Determination of contaminants in fats according to LMBG
DSLFF	Highest retention performance of the range Filtration of samples and solvents prior to HPLC Biochemical assays and clarifications of protein solutions
DFAAH	Filtration of suspended solids in water, wastewater analysis Total suspended solids analysis Atmospheric pollution control It is also suitable for cellular cultures

Product Characteristics

GVS	Retention Range (µm)	Weight (g/m ²)	Thickness (µm)	Retention Drop(*) (%)	Binder
DFAFA	1.6	52	260	99.998	NO
DAM10	1.0	143	700	99.998	NO
DMEFC	1.2	53	260	99.998	NO
DAM27	2.7	120	530	99.998	NO
DSLFF	0.7	75	450	99.998	NO
DFAAH	1.5	65	280	99.998	NO



Disc and Sheet Membrane

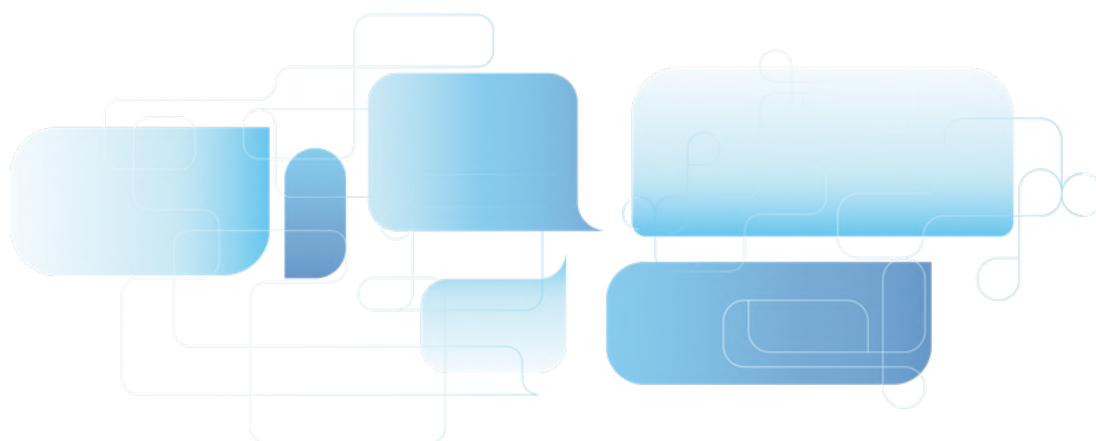
Ordering information

Diameter (mm)	DFAFA	DAM10	DMEFC	DAM27	DSLFF	DFAAH
	100 Circles/Box	50 Circles/Box	100 Circles/Box	100 Circles/Box	100 Circles/Box	100 Circles/Box
21	78172-376	78172-906	78172-830		78562-238	78172-810
24	78172-526	78173-454	78173-020		78172-888	78173-582
25	78172-660	78173-356	78172-298	78172-846	78172-704	78173-264
37	78172-778	78172-684	78172-230	78172-914*	78172-922	78173-416
47	78173-472	78173-420	78172-416	78173-114*	78172-748	78172-676
50	78173-672	78173-168	78172-272	78173-132*	78172-360	78172-674
55	78172-742	78172-482	78173-576	78172-982*	78173-212	78172-648
70	78173-634	78173-214	78173-608	78172-774*	78172-876	78172-858
90	78173-436	78173-280	78172-500	78172-602*	78172-952*	78173-116
110	78173-664	78172-472	78172-562	78173-604*	78173-494	78172-824
125	78173-018	78173-122	78173-536	78172-548*	78172-356	78173-288
142					78172-712	
150	78172-522	78173-678	78172-850	78173-426*	78173-530*	78173-108
240	78173-162*	78173-362**	78173-312	78172-838**	78173-004*	78173-374*
Size (mm)	DFAFA	DAM10	DMEFC	DAM27	DSLFF	DFAAH
	100 Sheets/Pack					
203x254	78562-356	78173-540	78562-022	78173-188	78172-874	78172-276
254x102mm	-	-	78173-398	-	-	-

* 50 Circles/Box; ** 25 Circles/Box;

Equivalence Table

GVS	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
DFAFA	GF-A	GF 50	GF1	MGA
DAM10	GF-B	GF 51	GF2	MGB
DMEFC	GF-C	GF 52	GF3	MCG
DAM27	GF-D	GF 53	GF4	MGD
DSLFF	GF-F	GF 55	GF5	MGF
DFAAH	934-AH	GF 30	GF6	550-HA



Disc and Sheet Membrane

2. Glass microfiber filters with binders

These glass microfiber filters are mostly used for monitoring air and gas or as prefilter. They have extreme mechanical and chemical stability because they are manufactured with synthetic binders to ensure that the filter has a defined strength. They have a temperature resistance of up to 180°C.

Product Characteristics

GVS	Retention Range (µm)	Weight (g/m ²)	Thickness (µm)	Binder
DAM64	1.0	85	450	YES

Grade	Applications
DAM64	Pre-filtration and clarification for Biopharmaceutical and Food & Beverage industry Filtration in ink industry Brine filtration

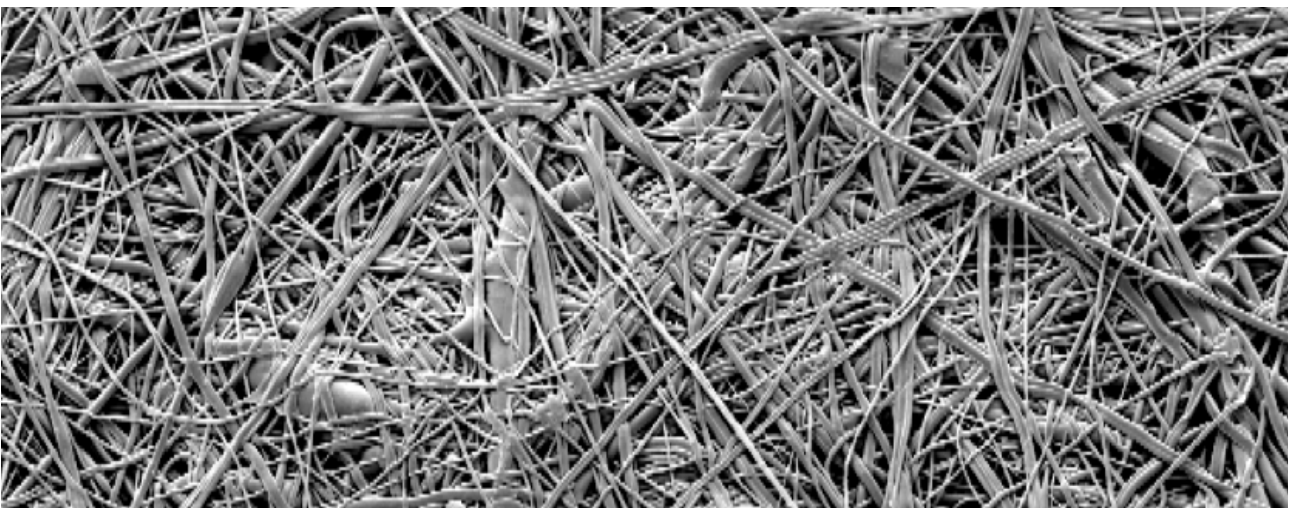
Ordering information

Diameter (mm)	DAM64
100 Circles/Box	
25	78173-158
37	78172-726
47	78172-974
50	78172-390
90	78172-428
150	78173-358

Note: for paper filter roll, please contact local representatives.

Equivalence Table

GVS	Equivalent 1	Equivalent 2
DAM64	GF6	GF6



Disc and Sheet Membrane

Quartz Microfiber Filters

The GVS quartz microfiber filters are made with pure quartz microfibers and are free of binders or additives of any kind. These filters have retention, loading and air permeability features similar to those of the glass microfiber filters. However, since they have greater chemical resistance at high temperatures, they can be used in environments where extreme conditions are present, replacing the glass microfiber filters in such cases.

D0QF1 High pure filter / low trace levels of heavy metals

D0QF2 Pre-heated High pure filter / very low trace levels of heavy metals

Features

High-purity quartz microfiber filters (SiO₂) free of binding elements or additives

Excellent retention levels for very fine particles

Very high air permeability

High temperature stability. It is very good up to 900°C, some loss of their usual properties setting in beyond that point

Excellent chemical stability with practically no filter-mass losses through chemical reactions under extreme conditions with the presence of acid gases (HCl, SO₂, SO₃, H₂, SO₄, NO and NO₃)

Applications

Determination of suspended particles on the atmosphere

Emissions monitoring in industrial chimneys

Gravimetric determination in gases

Monitoring the level of heavy metals in atmospheric pollution studies

Incinerators

When the temperature of emissions is higher than the temperature that the glass microfiber can beat, it is used quartz microfiber

Analysis of acid gases

Microplastic sample preparation and separation before chromatographic analysis

High-purity filter membrane designed for trace metal analysis (Pb, Cd, As, Ni) in PM10 according to EN 14902:2005

Product Characteristics

Grade	Weight (g/m ²)	Thickness (µm)	Retention Dop (*) (%)	Maximum Temperature (°C)	Binder	Penetration(*)
D0QF1	85.0	440	99,998	900	NO	< 0,002
D0QF2	85.0	430	99,999	900	NO	< 0,001

(*) Retention of a Dyoptil Ophtalate fog with 0.3 µm particles

Disc and Sheet Membrane

Ordering Information

Diameter (mm)	D0QF1	D0QF2
	50 Circles/Box	25 Circles/Box
25	78173-156	78173-118
37	78172-312	78172-560
47	78172-628	78173-146*
50	78173-500	78173-682
55	78172-338	78172-730
70	78173-200	78172-340
90	78173-656	78172-556
110	78172-816	78173-090
120	78172-724	78172-228
125	78173-328	78172-958
150	78172-686	78172-754
50 Sheets/Pack		
203X254	78173-324	

* 50 Circles/Box

Equivalence Table

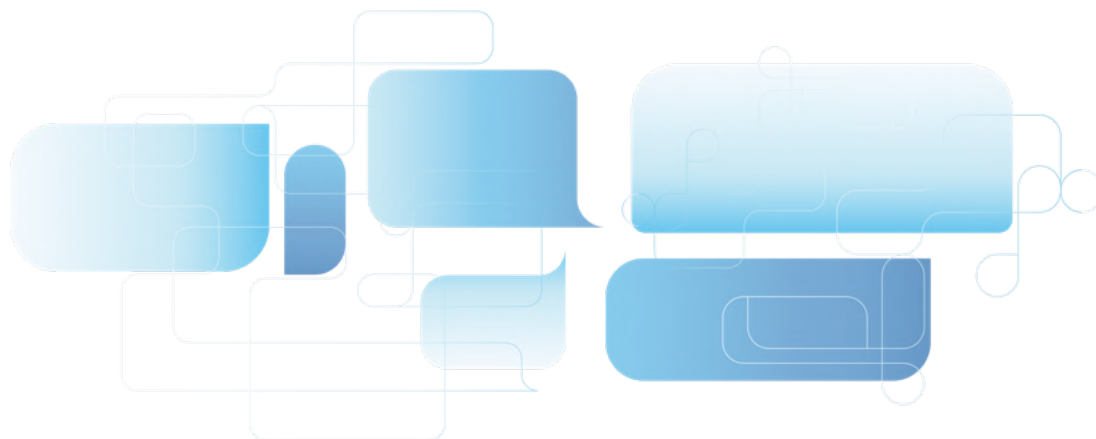
GVS	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
D0QF1	QM-A	QF20	QF10	T293
D0QF2	QM-C	-	-	MK360

Trace elements in ppm

Element	D0QF1	D0QF2
Al	50	25
As	0.75	0.2
Cd	1.5	<0.02
Co	1	<0.5
Cr	5	3.5
Cu	1.25	<1

Element	D0QF1	D0QF2
Fe	30	20
Hg	<0.05	<0.025
Mg	25	15
Mn	1.25	1
Na	40	10
Ni	2	0.5

Element	D0QF1	D0QF2
Pb	0.75	0.3
Sb	1.25	<1
Sn	0.5	<0.5
Tl	2.5	1.5
V	0.5	<0.5
Zn	5	3



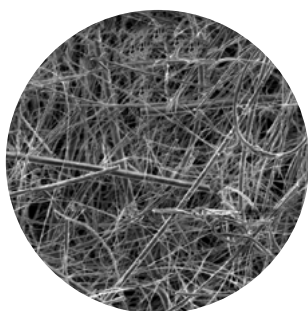
Membrane

Product Collection



Membrane

Glass Fiber Filters with or w/o Binder



GVS Glass Fiber membranes are biologically inert, autoclavable and highly resistant to oxidizing agents and weak acids. Glass fiber can be used to extend the life of a final filter as a prefilter or they can be used alone for low cost sample clarification. GVS Glass Fiber membranes with binders are composed of borosilicate

glass fibers woven into a porous matrix and bonded by an acrylic resin. This bonding produces a filter that reduces media migration and has the strength required for high-volume aqueous filtrations. Glass Fiber membranes with a binder are usually recommended for filtrations of long duration under pressure. Glass Fiber membranes without binders are designed for solvent filtration or gravimetric analysis to avoid binder extractables. Filters without binders are recommended for analytical and gravimetric determinations.

Characteristics

- Acrylic binder
- High dirt holding capacity
- Biologically inert
- Bonding reduces media migration

Product Characteristics: Glass Fiber Filters with Binder

Max operating Temperature	165 °C
1.0 µm G20 Grade: 60 gsm	0.30 mm thick
1.0 µm G20 Grade: 203 gsm	1.14 mm thick

Product Characteristics: Glass Fiber Filters Binderless

Max operating Temperature	500 °C
0.7 µm: 60 gsm	0.44 mm thick
1.0 µm: 56 gsm	0.28 mm thick

Glass Fiber Filters with Binder Ordering information

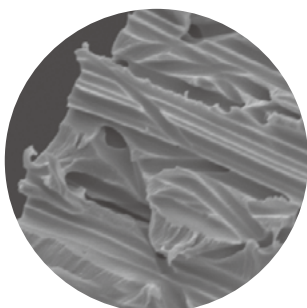
	Dimensions Packaging	13 mm 100/pk	22 mm 100/pk	25 mm 100/pk	47mm 100/pk	75 mm 25/pk	90 mm 25/pk	124 mm 25/pk	142 mm 25/pk
Pore sizes	0.5 µm (G15)		78173-192	78173-694	78172-600		78173-408	78173-564	78173-166
	1.0 µm (G20)			78173-074	78172-750	78172-784	78172-448		78173-250
	1.0 µm (G25)	78172-678			78172-880		78173-580		78173-610

Glass Fiber Filters Binderless Ordering information

	Dimensions Packaging	25 mm 100/pk	47 mm 100/pk	90 mm 25/pk
Pore sizes	0.7 µm	78173-532	78172-980	
	1.0 µm (G40)	78173-276*	78893-434*	78172-396 78172-566**

*500/pk **100/pk

Polycarbonate Track Etched (PCTE) Membrane



Features and Benefits

- Smooth, thin, glass-like surface is suitable for optical analysis applications
- PVP treated for hydrophilic wetting.
- Resists chemical staining to ease microscopy visualization

Polycarbonate Track Etched (PCTE) Membrane is recommended for TEM and SEM microscopic testing for Asbestos Monitoring.

GVS Polycarbonate Track Etched (PCTE) Membrane is made from a thin polycarbonate film with precisely defined pores. The proprietary manufacturing process provides increased control over pore size and density for absolute size separation. This unique process ensures the physical properties of each membrane precisely fit specification.

Product Characteristics

Thickness	8 - 11 μm
Optical Properties	Semi-translucent
Maximum Operating Temperature	284°F (140°C)
Residual Ash Weight Average	0.92 $\mu\text{g}/\text{cm}^2$
Sterilization	Gamma Irradiation or Ethylene Oxide (EtO)
Autoclavable	Yes
Wetting Characteristics	Hydrophilic

PCTE Hydrophilic Membrane - Disks Ordering information

	Dimensions Packaging	25 mm 100/pk	37 mm 100/pk	47 mm 100/pk
Pore sizes	0.2 μm	78172-826		78172-534
	0.4 μm	78172-646	78562-568	78172-468
	0.8 μm	78172-736	78172-532	78172-552
	1 μm	78172-632		78172-372

Membrane

Extraction Thimbles

GVS extraction thimbles are manufactured in three versions:

- High purity cellulose
- Pure borosilicate glass microfiber
- High purity quartz microfiber

The extraction thimbles are suitable for Soxhlet type, Tecator type or similar devices.

They are located in the extractor body, used to accommodate a sample of solid material to extract certain components out, with the addition of an appropriate solvent.

1. Cellulose extraction thimbles

GVS high-quality cellulose extraction thimbles are made from high-alpha cellulose cotton linters with rounded bottom.

Features

Manufactured in high-alpha cellulose cotton linters

Strong mechanical structure and retentivity

Maximum working temperature 120°C

Tolerances according to DIN 12449:

- Internal diameter $\pm 0/-3$ mm
- Thimble height ± 1 mm
- Wall thickness ± 0.5 mm
- Ash content $< 0.1\%$

Applications

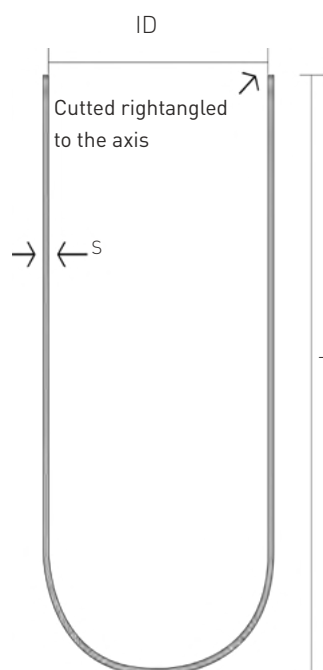
Fat extraction in foodstuffs, paints and varnishes

Extraction of polymers

Determination of environmental pollutants

They are usually used in extractors of the "Soxhlet", "Tecator" or similar types, in order to collect solid material from which components must be separated out by dissolving in a suitable solvent

The thimbles size selection should be done carefully to fit extractors correctly. The references sizes are internal diameter and the length in mm (an extra allowance for wall thickness should be added when selecting external diameters)



DIMENSIONS OF AN
EXTRACTION THIMBLE:
ID = Inner diameter in mm
L = Length in mm
S = Wall thickness in mm
Standard thickness:
CC0Q0 S=1.5 mm
Double thickness:
DC0Q0 2<S<2.5 mm

Membrane

Ordering information. Standard Thickness (1-1.5 mm)

(*) Size (mm) Int x Length	Product Code	(*) Size (mm) Int x Length	Product Code	(*) Size (mm) Int x Length	Product Code
25 Thimlbes/Box		25 Thimlbes/Box		25 Thimlbes/Box	
16x100	78561-966	27x80		35x100	
19x90	78561-998	27x100		35x150	78562-614
20x80	78172-252	28x22	78562-056	40x100	
22x60	78562-532	28x100	78562-006	40x123	
22x65		30x77		43x123	78561-988
22x80*	78562-580	30x80	78173-542	48x125	
22x90		30x100	78562-578	50x160	78562-538
22x100		33x80	78172-516	52x180	
25x60	78562-172	33x94	78562-016	53x145	
25x80	78562-342	33x100	78172-840	58x180	
25x100	78172-418	33x118	78173-396	60x80	
26x60	78562-324	35x50		60x120	

(*) Other sizes available under request.

Ordering information. Double Thickness (2-2.5 mm)

(*) Size (mm) Int x Length	Product Code	(*) Size (mm) Int x Length	Product Code
25 Thimlbes/Box		25 Thimlbes/Box	
19x90	78561-964	33x94	78562-548
22x65		33x100	78562-292
22x80	78562-462	35x100	78562-146
22x90		60x80	78562-434
25x100	78562-600	60x120	78562-376
28x100	78562-266	68x250	
30x100	78562-142	75x160	78561-976
33x80	78562-498	90x180	78562-530

Equivalence Table

GVS	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
CC0Q0	2800	603	MN 645	Grade 30
DC0Q0	2810	-	MN 645F	-

Membrane

2. Glass microfiber thimbles

GVS high-quality glass microfiber thimbles are made from 100% pure borosilicate fibers. They have special advantages since no binders of any kind are used in their manufacture process.

They are particularly suitable when solvents that are incompatible with cellulose thimbles are present.

Features

Manufactured in 100% pure borosilicate fibers without binders

High loading capacity

High retention of very small particles

High air permeability

Good stability in high temperature. Maximum working temperature 500°C

Tolerances for GF0Q0 glass microfiber thimbles:

- Internal diameter $\pm 1/-3$ mm
- Thimble height ± 1 mm
- Wall thickness 2 ± 0.5 mm

Applications

Extraction of solvents which are not compatible with cellulose cotton linter

Gas emission controls for industrial chimneys

Gravimetric testing for dust in hot gases

Product Characteristics

Grade	Retention Dop (*) (%)	Maximum Temperature (°C)	Binder
GF0Q0	99.998	500	NO

Ordering information

(*) Size (mm) Int x Length	Product Code	(*) Size (mm) Int x Length	Product Code
25 Thimbles/Box		25 Thimbles/Box	
19x90	78172-310	33x80	78562-336
22x80	78562-076	33x94	78562-258
25x100	78562-180	35x150	78173-346
26x60		43x123	78173-598
30x100	78562-476	58x180	-

(*) Other sizes available under request.

Equivalence Table

GVS	Equivalent 1	Equivalent 2	Equivalent 3	Equivalent 4
GF0Q0	603g	603g	649	Grade 40

Membrane

3. Quartz microfiber thimbles

GVS quartz microfiber thimbles are made from high purity quartz microfiber. These thimbles are able to withstand high temperatures (up to 900°C), and meet the highest requirements for purity, specially because of their low heavy metal content.

Features

Manufactured in high-purity quartz microfiber filters (SiO₂) free of binding elements or additives

High loading capacity

High retention of very small particles

High air permeability

Good stability in high temperature. Maximum working temperature 900°C

Tolerances for QZ0Q0 micro-quartz thimbles:

- Internal diameter +0/-3mm
- Thimble height ±1mm
- Wall thickness 2 ±0.5mm

Applications

Gas emission controls for industrial chimneys

Gravimetric testing for dust in hot gases

Determination of environmental pollutants

Extraction in highly concentrated acid or alkaline solutions

Product Characteristics

Grade	Retention Dop (*) [%]	Maximum Temperature [°C]	Binder
QZ0Q0	99.998	900	NO

Ordering information

(*) Size (mm) Int x Length	Product Code
25 Thimbles/Box	
25x100	78562-206
30x100	78562-168
35x150	-
43x123	78562-350

(*) Other sizes available under request.

Equivalence Table

GVS	Equivalent 1	Equivalent 2	Equivalent 4
QZ0Q0	603q	603q	MK 360

Sample Preparation

Product Collection



Sample Preparation

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.

Sample Preparation

The GVS Life Sciences Sample Preparation Family



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.

Products Selection Guide

HPLC Sample Preparation

Sample	Organic or Aqueous	Protein-Based Aqueous	Acid or Base Sample De-gassing	Aggressive acids and alcohols	Protein and Biological fluid	Organic sol-vents	
Detection Level / Filter Membrane	< 230 nm Nylon	< 230 nm Polypropylene	<230 nm Polypropylene	PTFE	PVDF	PES	RC
Sample Volume							
	<1mL	< 20 mL	< 100 mL	<1000			
Filter Device	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 μm and 0.45 μm . Generally, 0.45 μm is sufficient for the majority of procedures. However, where smaller particles may be present in the sample 0.2 μm or 0.1 μm 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

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

Tissue Culture Media

Sample Preparation Products Selection Guide

Sample Concerns		Presterilized 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	Polypropylene, PTFE and silicone septa	0,20, 0,45	No	Yes
			Regenerated Cellulose		0,20, 0,45	No	Yes
			Nylon 66		0,20, 0,45	No	Yes
			Polyvinylidene Fluoride		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
			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

Membrane Selection Guide

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 Micro-fibre	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 - Chemically and Biologically Inert	- 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 Preparation - 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
Regenerated 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.

Sample Preparation

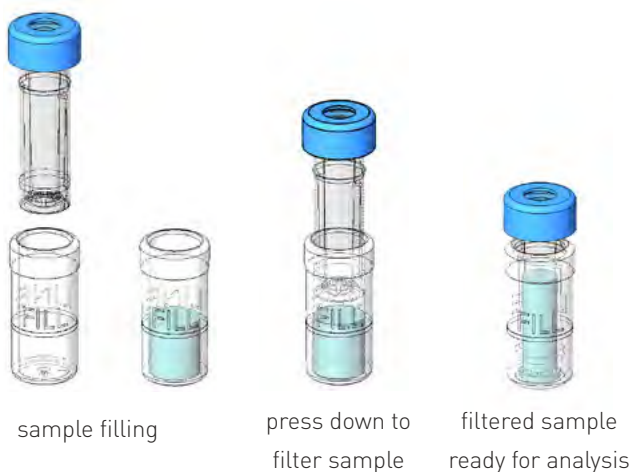
Syringeless Filters - SEPARA®



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.
- 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

Filtrating Capacity: 450 microliter

Dead Volume: 30 microliter

Compression Force: 8 psi (0.6 bar)

Maximum operating temperature: 120°F (50°C)

Housing options: amber for protection against photodegradation of light-sensitive samples, or translucent polypropylene (PP) for easy visual inspection.



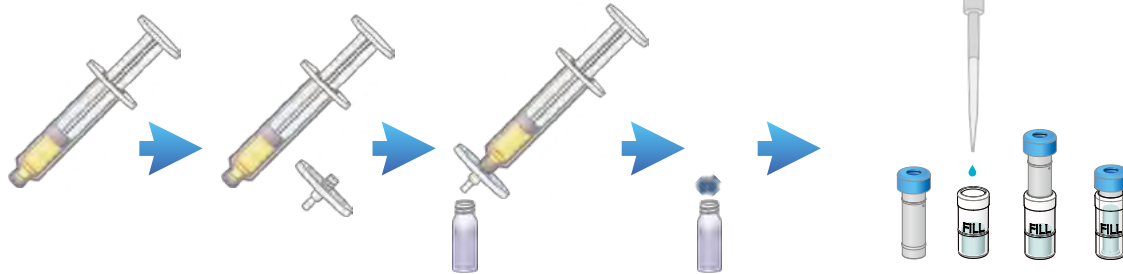
Ordering information

Membrane Material	Pore Size (µm)	Housing	Color	Product Code
				100/pk
Polytetrafluoroethylene (PTFE)	0.20	Translucent	Pink	78172-902
Polytetrafluoroethylene (PTFE)	0.45	Translucent	Red	78172-438
Regenerated Cellulose (RC)	0.20	Translucent	Gray	78173-414
Regenerated Cellulose (RC)	0.45	Translucent	Black	78172-966
Nylon (NY)	0.20	Translucent	Light Blue	78172-702
Nylon (NY)	0.45	Translucent	Blue	78173-684
Polyvinylidene Fluoride (PVDF)	0.20	Translucent	Yellow	78172-776
Polyvinylidene Fluoride (PVDF)	0.45	Translucent	Orange	78172-344
Polyethersulfone (PES)	0.20	Translucent	Light Green	78172-278
Polyethersulfone (PES)	0.45	Translucent	Dark Green	78172-280

Sample Preparation

Separa Syringeless Filter: Advantages

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



Save Purchasing Time & Cost On Consumables



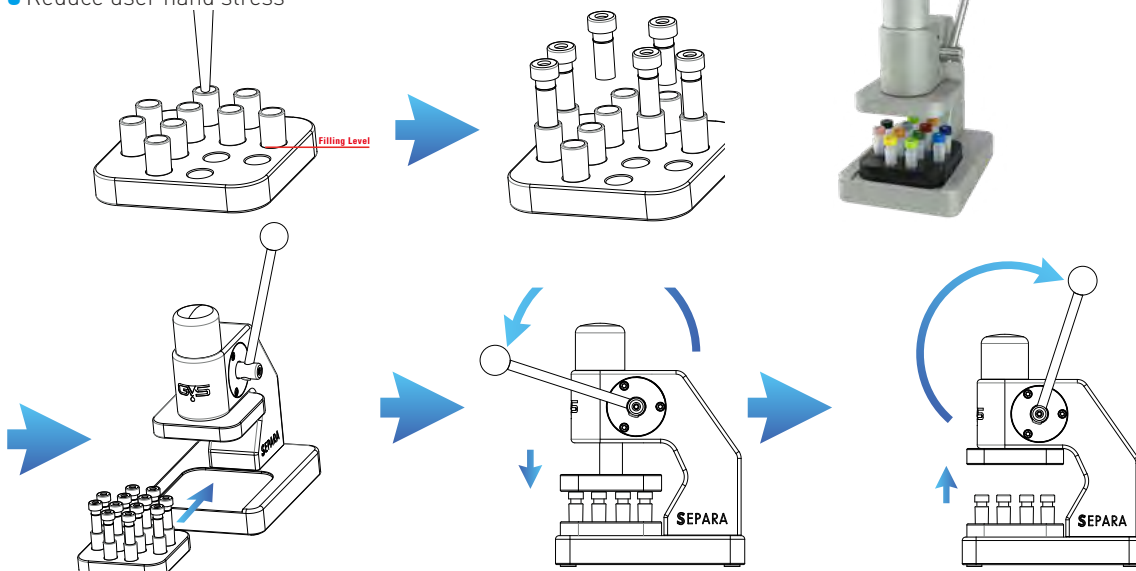
Easy to Dispose & Save Time On Waste Management



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



Sample Preparation

13 mm ABLUO® Syringe Filters



Characteristics

Membrane Materials: Cellulose Acetate, Nitrocellulose (MCE), Nylon 66, 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

Ordering information

Membrane Material	Pore Size (µ m)	End Fitting	Hosing Material	Color	Product Code	
					Packaging 100/ pk	Packaging 500/ pk
Cellulose Acetate [CA]	0.22	FLL/MLL	Acrylic	Blue	78172-366	78172-818
Cellulose Acetate [CA]	0.45	FLL/MLL	Acrylic	Yellow	78173-646	78173-144
Cellulose Acetate [CA]	0.80	FLL/MLL	Acrylic	Green	78172-844	78173-110
Cellulose Acetate [CA]	1.20	FLL/MLL	Acrylic	Red	78173-476	78173-510
Cellulose Acetate [CA]	5.00	FLL/MLL	Acrylic	Brown	78173-696	78172-820
Nylon 66 [NY]	0.22	FLL/MLS	Polypropylene	Transparent	78173-304	78173-368
Nylon 66 [NY]	0.45	FLL/MLS	Polypropylene	Transparent	78172-238	78172-832
Nylon 66 [NY]	5.0	FLL/MLL	Acrylic	Transparent	-	-
Polyethersulfone [PES]	0.22	FLL/MLS	Polypropylene	Transparent	78172-944	78173-208
Polyethersulfone [PES]	0.45	FLL/MLS	Polypropylene	Transparent	78172-286	78172-746
Mixed Cellulose Esters [MCE]	0.22	FLL/MLS	Polypropylene	Transparent	78173-428	78173-320
Mixed Cellulose Esters [MCE]	0.45	FLL/MLS	Polypropylene	Transparent	78173-410	78172-226
Regenerated Cellulose [RC]	0.22	FLL/MLS	Polypropylene	Transparent	78173-612	78172-656
Regenerated Cellulose [RC]	0.45	FLL/MLS	Polypropylene	Transparent	78173-024	78173-318
Polyvinylidene Fluoride [PVDF]	0.22	FLL/MLS	Polypropylene	Transparent	78172-540	78173-246
Polyvinylidene Fluoride [PVDF]	0.45	FLL/MLS	Polypropylene	Transparent	78172-474	78173-178
Polytetrafluoroethylene [PTFE]	0.22	FLL/MLS	Polypropylene	Transparent	78172-584	78173-386
Polytetrafluoroethylene [PTFE]	0.45	FLL/MLS	Polypropylene	Transparent	78173-560	78172-812
Polytetrafluoroethylene Hydrophilic [PTFE HP]	0.22	FLL/MLS	Polypropylene	Transparent	78173-524	78173-182
Polytetrafluoroethylene Hydrophilic [PTFE HP]	0.45	FLL/MLS	Polypropylene	Transparent	78172-302	78173-544

Sample Preparation

25 mm ABLUO® Syringe Filters



Typical Applications

- ◆ Analytical sample preparation
- ◆ Biological fluids
- ◆ Buffer solutions
- ◆ Sterile filtering of tissue culture media
- ◆ Protein aqueous solutions

Characteristics

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

- ◆ Biofuel analysis
- ◆ HPLC sample preparation
- ◆ Pesticide testing
- ◆ Cannabis potency testing
- ◆ Neutraceutical sample preparation

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	78172-664	78172-546
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	78172-424	78173-314
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	78172-842	78172-430
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	78172-504	78173-104
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	78172-650	78173-038
Nylon 66 (NY)	0.22	FLL/MLS	Polypropylene	Transparent	78172-682	78172-760
Nylon 66 (NY)	0.45	FLL/MLS	Polypropylene	Transparent	78172-728	78173-160
Polyethersulfone (PES)	0.22	FLL/MLS	Polypropylene	Transparent	78172-680	78172-314
Polyethersulfone (PES)	0.45	FLL/MLS	Polypropylene	Transparent	78172-972	78172-550
Mixed Cellulose Esters (MCE)	0.22	FLL/MLS	Polypropylene	Transparent	78173-614	78173-194
Mixed Cellulose Esters (MCE)	0.45	FLL/MLS	Polypropylene	Transparent	78172-336	78173-022
Regenerated Cellulose (RC)	0.22	FLL/MLS	Polypropylene	Transparent	78173-588	78173-484
Regenerated Cellulose (RC)	0.45	FLL/MLS	Polypropylene	Transparent	78173-088	78172-856
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Polypropylene	Transparent	78172-762	78173-600
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Polypropylene	Transparent	78172-896	78172-326
Polytetrafluoroethylene (PTFE)	0.22	FLL/MLS	Polypropylene	Transparent	78172-910	78173-270
Polytetrafluoroethylene (PTFE)	0.45	FLL/MLS	Polypropylene	Transparent	78173-492	78173-196
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.22	FLL/MLS	Polypropylene	Transparent	78173-186	78173-044
Polytetrafluoroethylene Hydrophilic (PTFE HP)	0.45	FLL/MLS	Polypropylene	Transparent	78172-400	78172-640
Glass Fiber (GF)	0.70	FLL/MLS	Polypropylene	Transparent	78172-946	78172-364
Glass Fiber (GF)	1.00	FLL/MLS	Polypropylene	Transparent	78173-462	78172-574
Glass Fiber (GF)	1.20	FLL/MLS	Polypropylene	Transparent	78173-690	78172-538
Glass Fiber (GF)	3.10	FLL/MLS	Polypropylene	Transparent	78172-590	78172-768
Glass Fiber (GF)	4.5	FLL/MLS	Polypropylene	Transparen	78172-222	-
Cellulose Acetate (CA)	0.22	FLL/MLS	Polypropylene	Transparent	-	78172-308
Cellulose Acetate (CA)	0.45	FLL/MLS	Polypropylene	Transparent	-	78173-686

Sample Preparation

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	78172-860
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	78173-538
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	78172-892
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	78173-468
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	78172-260
Polyethersulfone (PES)	0.22	FLL/MLS	Acrylic	Transparent	78173-248
Polyethersulfone (PES)	0.45	FLL/MLS	Acrylic	Transparent	78173-220
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Acrylic	Transparent	78172-720
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Acrylic	Transparent	78173-364

Sample Preparation

25 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

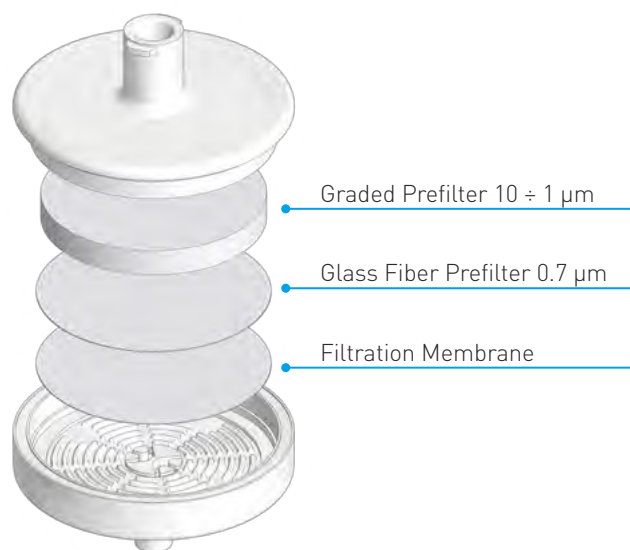
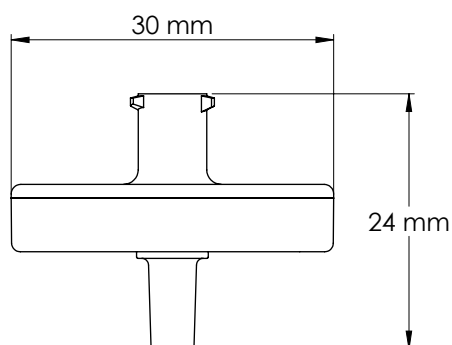
- ◆ Filtration of Aqueous and Alcohol Solutions
- ◆ Sterile Filtration and Clarification
- ◆ Cell Culture
- ◆ Analytical Sample Preparation
- ◆ IC Chromatography
- ◆ Clarification
- ◆ Protein Chemistry
- ◆ Filtration of Aqueous and Organic Solutions

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	78172-586
Cellulose Acetate (CA)	0.45	FLL/MLS	Acrylic	Transparent	78172-936
Cellulose Acetate (CA)	0.80	FLL/MLS	Acrylic	Transparent	78172-264
Cellulose Acetate (CA)	0.22	FLL/MLL	Acrylic	Blue	78173-636
Cellulose Acetate (CA)	0.45	FLL/MLL	Acrylic	Yellow	78173-446
Cellulose Acetate (CA)	0.80	FLL/MLL	Acrylic	Green	78172-928
Cellulose Acetate (CA)	1.20	FLL/MLL	Acrylic	Red	78173-238
Cellulose Acetate (CA)	5.00	FLL/MLL	Acrylic	Brown	78172-554
Mixed Cellulose Esters (MCE)	0.22	FLL/MLS	Acrylic	Transparent	78173-154
Mixed Cellulose Esters (MCE)	0.45	FLL/MLS	Acrylic	Transparent	78172-258
Nylon 66 (NY)	0.10	FLL/MLS	Acrylic	Transparent	78172-316
Nylon 66 (NY)	0.22	FLL/MLS	Acrylic	Transparent	78173-344
Nylon 66 (NY)	0.45	FLL/MLS	Acrylic	Transparent	78173-234
Nylon 66 (NY)	1.20	FLL/MLS	Acrylic	Transparent	78172-992
Nylon 66 (NY)	5.00	FLL/MLS	Acrylic	Transparent	78173-422
Polyethersulfone (PES)	0.80	FLL/MLS	Acrylic	Transparent	78172-292
Polyethersulfone (PES)	0.22	FLL/MLS	Acrylic	Transparent	78173-258
Polyethersulfone (PES)	0.45	FLL/MLS	Acrylic	Transparent	78172-658
Polyvinylidene Fluoride (PVDF)	0.22	FLL/MLS	Acrylic	Transparent	78173-622
Polyvinylidene Fluoride (PVDF)	0.45	FLL/MLS	Acrylic	Transparent	78172-610

Sample Preparation

ABLUO Supreme



Characteristics

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

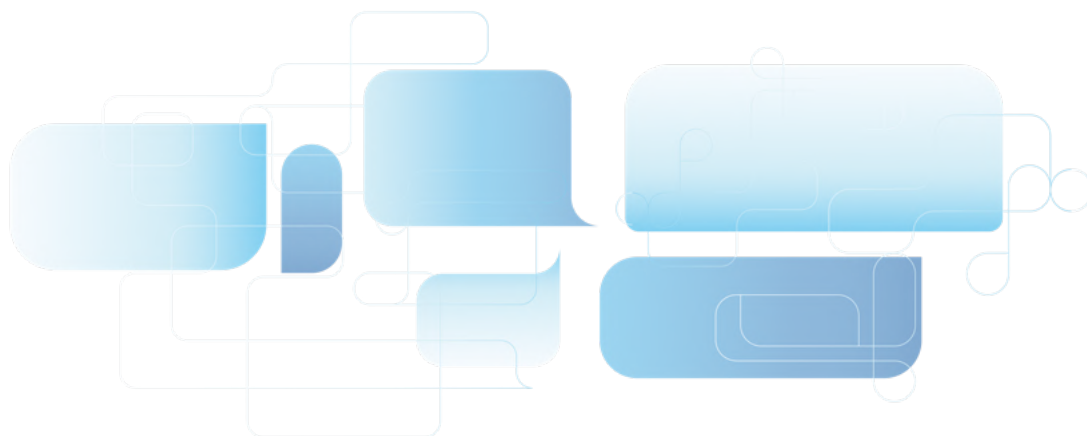
Shelf Life (normal conditions): 3 years

Ordering information

Membrane Material	Pore Size (µm)	Description	Packaging	Product Code
NY	0.22	25MM FLL/MLS PP GF/F/NY 0.7/0.22µm	10/PK	78173-384
NY	0.22	25MM FLL/MLS PP GF/F/NY 0.7/0.22µm	50/PK	78173-550
NY	0.22	25MM FLL/MLS PP GF/F/NY 0.7/0.22µm	500/PK	78173-300
NY	0.45	25MM FLL/MLS PP GF/F/NY 0.7/0.45µm	10/PK	78173-570
NY	0.45	25MM FLL/MLS PP GF/F/NY 0.7/0.45µm	50/PK	78173-242
NY	0.45	25MM FLL/MLS PP GF/F/NY 0.7/0.45µm	500/PK	78172-878
PES	0.22	25MM FLL/MLS PP GF/F/PES 0.7/0.22µm	10/PK	78173-442
PES	0.22	25MM FLL/MLS PP GF/F/PES 0.7/0.22µm	50/PK	78172-706
PES	0.22	25MM FLL/MLS PP GF/F/PES 0.7/0.22µm	500/PK	78172-436
PES	0.45	25MM FLL/MLS PP GF/F/PES 0.7/0.45µm	10/PK	78172-434
PES	0.45	25MM FLL/MLS PP GF/F/PES 0.7/0.45µm	50/PK	78173-354
PES	0.45	25MM FLL/MLS PP GF/F/PES 0.7/0.45µm	500/PK	78172-512

Sample Preparation

Membrane Material	Pore Size (µm)	Description	Packaging	Product Code
PTFE	0.22	25MM FLL/MLS PP GF/F/PTFE 0.7/0.22µm	10/PK	78173-210
PTFE	0.22	25MM FLL/MLS PP GF/F/PTFE 0.7/0.22µm	50/PK	78173-296
PTFE	0.22	25MM FLL/MLS PP GF/F/PTFE 0.7/0.22µm	500/PK	78172-950
PTFE	0.45	25MM FLL/MLS PP GF/F/PTFE 0.7/0.45µm	10/PK	78173-086
PTFE	0.45	25MM FLL/MLS PP GF/F/PTFE 0.7/0.45µm	50/PK	78173-558
PTFE	0.45	25MM FLL/MLS PP GF/F/PTFE 0.7/0.45µm	500/PK	78173-106
PTFE (Hydrophilic)	0.22	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.22µm	10/PK	78172-612
PTFE (Hydrophilic)	0.22	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.22µm	50/PK	78173-128
PTFE (Hydrophilic)	0.22	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.22µm	500/PK	78172-866
PTFE (Hydrophilic)	0.45	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.45µm	10/PK	78172-836
PTFE (Hydrophilic)	0.45	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.45µm	50/PK	78173-308
PTFE (Hydrophilic)	0.45	25MM FLL/MLS PP GF/F/PTFE HYPHILIC 0.7/0.45µm	500/PK	78172-306
PVDF	0.22	25MM FLL/MLS PP GF/F/PVDF 0.7/0.22µm	10/PK	78172-490
PVDF	0.22	25MM FLL/MLS PP GF/F/PVDF 0.7/0.22µm	50/PK	78172-990
PVDF	0.22	25MM FLL/MLS PP GF/F/PVDF 0.7/0.22µm	500/PK	78173-070
PVDF	0.45	25MM FLL/MLS PP GF/F/PVDF 0.7/0.45µm	10/PK	78172-420
PVDF	0.45	25MM FLL/MLS PP GF/F/PVDF 0.7/0.45µm	50/PK	78172-254
PVDF	0.45	25MM FLL/MLS PP GF/F/PVDF 0.7/0.45µm	500/PK	78172-568
RC	0.22	25MM FLL/MLS PP GF/F/RC 0.7/0.22µm	10/PK	78172-268
RC	0.22	25MM FLL/MLS PP GF/F/RC 0.7/0.22µm	50/PK	78173-430
RC	0.22	25MM FLL/MLS PP GF/F/RC 0.7/0.22µm	500/PK	78173-130
RC	0.45	25MM FLL/MLS PP GF/F/RC 0.7/0.45µm	10/PK	78172-508
RC	0.45	25MM FLL/MLS PP GF/F/RC 0.7/0.45µm	50/PK	78172-426
RC	0.45	25MM FLL/MLS PP GF/F/RC 0.7/0.45µm	500/PK	78172-266
CA	0.22	25MM FLL/MLS PP GF/F/CA 0.7/0.22µm	10/PK	78173-096
CA	0.22	25MM FLL/MLS PP GF/F/CA 0.7/0.22µm	50/PK	78173-064
CA	0.22	25MM FLL/MLS PP GF/F/CA 0.7/0.22µm	500/PK	78172-988
CA	0.45	25MM FLL/MLS PP GF/F/CA 0.7/0.45µm	10/PK	78172-798
CA	0.45	25MM FLL/MLS PP GF/F/CA 0.7/0.45µm	50/PK	78173-176
CA	0.45	25MM FLL/MLS PP GF/F/CA 0.7/0.45µm	500/PK	78173-432



Sample Preparation

Centrifuge Filters - Centrex™



GVS centrifuge filters, Centrex, has various type of membranes and make able the end users to do a larger sample preparation, with a considerable reduction of contamination risk. Thanks to the GVS knowledge in filtration, using Centrex you can reduce the risk of cross contamination.

Characteristics

- Centrifugal filter units with various types of membrane filter
- Rapid and simple preparation of a large number of samples
- Ideal for automated systems and high-speed batch filtration with robots
- Considerably reduced contamination risk when working with radioactive biologically hazardous material
- Cross contamination avoided
- Receiver Tubes 1.5 or 5 mL
- Housing Material Polypropylene

Typical Applications

- 0.45 µm cellulose acetate membrane for the rapid elution of agarose gels
- Nylon 66 and cellulose acetate membranes for the removal of particles and microorganisms from HPLC samples
- Sample preparation for quality control
- Cellulose acetate and nitrocellulose membrane for rapid clearing and filtration of aqueous solutions

Ordering information

Membrane	Pore Size (µm)	Color	1.5 mL Sterile	1.5 mL non-Sterile	5 mL Sterile	5 mL non-Sterile
			50/pk	250/pk	50/pk	250/pk
Nylon 66	0.2	Brown	10057-742	-	10057-746	10057-744
Nylon 66	0.45	Tan	-	10057-748	10057-754	10057-752
Cellulose Acetate	0.2	Blue	10057-724	10057-608	10057-726	-
Cellulose Acetate	0.45	White	10057-728	10057-730	10057-732	-
Cellulose Acetate	0.8	Green	10057-734	-	-	-
Nitrocellulose	0.2	Pink	10057-736	-	-	-
Nitrocellulose	0.45	Rust	10057-738	-	10057-740	-

Sample Preparation

Centrifugal Filters



Description

Centrifugal Filters, With 50mL conical tube, PES membrane, Non-sterile.

Purpose

For the centrifugal concentration and purification of biological samples.

Materials

Cap/Sealing gasket: PE (Polyethylene) Color: White

Centrifuge tube: PP (Polypropylene)

Filter: Filter slice (PE/Polyethylene)

Filter tube (MBS/Methyl methacrylate-Butadiene-Styrene);

Membrane: PES (Polyethersulfone)

Features

- Operating temperature range: 0°C - 40°C
- Available in multiple pore sizes with the following defined Molecular Weight Cut-Offs (MWCO): 5, 10, 30, 50 and 100 KD
- Maximum Sample Volume: 15.0 mL (Swinging bucket), 12.0 mL (Fixed angle rotor)
- Final Concentrate Volume: 200 µL
- Fits centrifuges that accept standard 50 mL conical tubes
- Maximum Centrifugal Force: Swinging bucket rotor (3,000 x g), Fixed angle rotor (4,000 x g)
- Active membrane area: 9.7 cm²
- Provides high recoveries more than 80%
- The vertical design and available membrane surface area provide fast sample processing
- Features deadstop to prevent samples from spinning to dryness
- Manufactured in a class 100,000 room environment
- Manufactured under ISO13485 and ISO9001 quality management system

5 KD	10 KD	30 KD	50 KD	100 KD

Dimensions(Unit:mm)

Filter device in tube (capped)

Length: 119.5 mm Diameter: 33.7 mm

Filter device

Length: 72.5mm Diameter: 29.3 mm

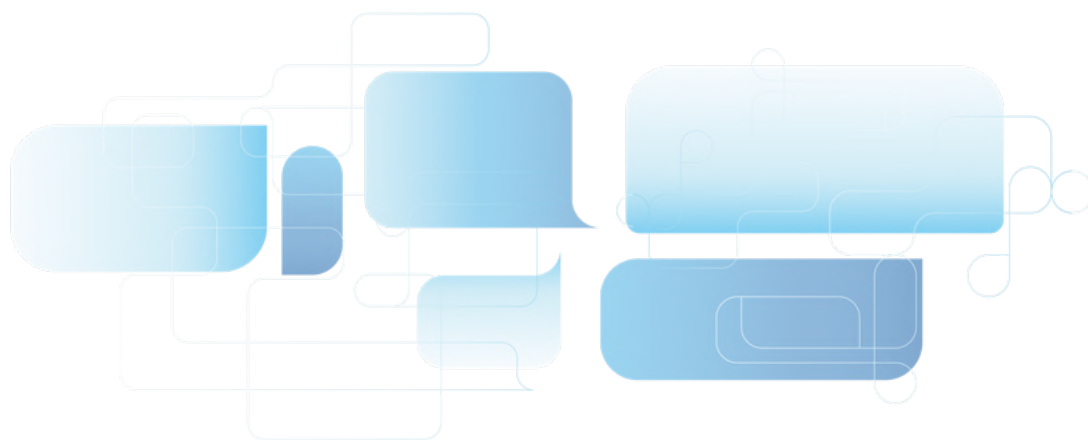
Sample Preparation

The membrane is not compatible with the following

- Acetic Acid ($\geq 25\%$)
- Acetonitrile ($\geq 30\%$)
- Aliphatic & aromatic esters
- Amines
- Ammonium hydroxide ($\geq 5\%$) Aromatic & chlorinated hydrocarbons Butyl acetate ($\geq 40\%$)
- Dimethyl acetamide (DMAC) ($\geq 30\%$)
- Ethers
- Hydrochloric acid (≥ 0.5 N at 50°C)
- Isopropyl Alcohol ($\geq 25\%$)
- Ketone
- Methylene chloride ($\geq 1\%$)
- Methyl ethyl ketone ($\geq 1\%$)
- Phosphoric acid (≥ 1 N)
- Sodium deoxycholate ($\geq 5\%$)
- Sodium hydroxide (≥ 0.5 N at 50°C) Sodium hypochlorite ($\geq 0.04\%$)
- Tetrahydrofuran ($\geq 5\%$)
- Toluene ($\geq 1\%$)

Ordering information

Product Code	MWCO	Sterilization	Quantity/Box	Quantity/Case
78562-250	5KD	No	8	96
78562-448	5KD	No	24	96
78562-234	10KD	No	8	96
78172-718	10KD	No	24	96
78173-080	30KD	No	8	96
78562-564	30KD	No	24	96
78562-272	50KD	No	8	96
78562-070	50KD	No	24	96
78562-004	100KD	No	8	96
78173-120	100KD	No	24	96



Sample Preparation

Centrifugal Filters



Description

Centrifugal Filters, With 15mL conical tube, PES membrane, Non-sterile

Purpose

For the centrifugal concentration and purification of biological samples

Materials

Cap/Sealing gasket: PE (Polyethylene) Color: White
Centrifuge tube: PP (Polypropylene)
Filter: MBS (Methyl methacrylate-Butadiene-Styrene)
Membrane: PES (Polyethersulfone)

Features

- Operating temperature range: 0°C - 40°C
- Available in multiple pore sizes with the following defined Molecular Weight Cut-Offs (MWCO): 5, 10, 30, 50 and 100 KD
- Maximum Sample Volume: 5.0 mL
- Final Concentrate Volume: 40-100 µL
- Fits centrifuges that accept standard 15 mL conical tubes
- Maximum Centrifugal Force: Swinging bucket rotor (3,000 x g), Fixed angle rotor (7,500 x g for 5, 10 KD; 5,000 x g for 30, 50, 100 KD)
- Active membrane area: 3.5 cm²
- Provides high recoveries more than 90%
- The vertical design and available membrane surface area provide fast sample processing
- Features deadstop to prevent samples from spinning to dryness
- Manufactured in a class 100,000 room environment
- Manufactured under ISO13485 and ISO9001 quality management system

5 KD	10 KD	30 KD	50 KD	100 KD

Dimensions(Unit:mm)

Filter device in tube (capped)

Length: 123.4 mm Diameter: 22mm

Filter device

Length: 68mm Diameter: 17.1 mm

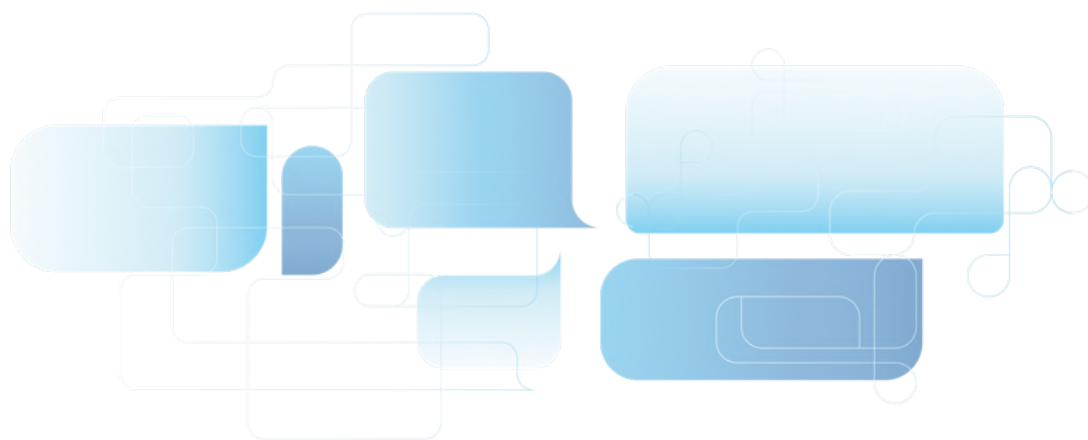
Sample Preparation

The membrane is not compatible with the following

- Acetic Acid ($\geq 25\%$)
- Acetonitrile ($\geq 30\%$)
- Aliphatic & aromatic esters
- Amines
- Ammonium hydroxide ($\geq 5\%$)
- Aromatic & chlorinated hydrocarbons
- Butyl acetate ($\geq 40\%$)
- Dimethyl acetamide (DMAC) ($\geq 30\%$)
- Ethers
- Hydrochloric acid (≥ 0.5 N at 50°C)
- Isopropyl Alcohol ($\geq 25\%$)
- Ketone
- Methylene chloride ($\geq 1\%$)
- Methyl ethyl ketone ($\geq 1\%$)
- Phosphoric acid (≥ 1 N)
- Sodium deoxycholate ($\geq 5\%$)
- Sodium hydroxide (≥ 0.5 N at 50°C)
- Sodium hypochlorite ($\geq 0.04\%$)
- Tetrahydrofuran ($\geq 5\%$)
- Toluene ($\geq 1\%$)

Ordering information

Product Code	MWCO	Sterilization	Quantity/Box	Quantity/Case
78562-120	5KD	No	24	96
78562-096	8KD	No	8	96
78562-310	8KD	No	24	96
78173-076	10KD	No	24	96
78562-368	30KD	No	24	96
78562-024	50KD	No	24	96
78562-620	100KD	No	24	96



Sample Preparation

Bottle-top Filters - ZapCap™

ZAPCAP



GVS Bottle-top Filters is ideal solution for the filtration of cell culture media and HPLC media solution. ZapCap is a complete 500 mL filtration unit to connect with receiver bottles. ZapCap are equipped with side tubing nozzle (bottle-top). This ready to use filter is available with prefilter too. The connection seals fit on any standard bottle 33 to 45 mm and the membrane diameter is 76 mm with an effective area of filtration of 39.2 cm². Can be used up to 50°C.

ZapCap™ Selection Guide

ZapCap-S with included package of 12 glass fiber prefilter for high flow rates

ZapCap-S Plus with a glass fiber prefilter for very high flow rates already inserted into the housing.

ZapCap-CR, the chemical-resistant bottle-top filter

Typical Applications

ZapCap-S - Filtration of cell culture media

Cellulose acetate membrane filters (CA) with extremely low protein binding for cell culture media and other aqueous solutions. Sterile filtration of solutions that cannot be autoclaved

ZapCap-S Plus - Sterile filtration and clarification of difficult-to-filter aqueous solutions

ZapCap-CR - Filtration of HPLC solutions

Polyamide Nylon 66 membrane filters (NY) for the retention of particles $\geq 0.2 \mu\text{m}$ in HPLC/FPLC solutions when the column packing is $\leq 10 \mu\text{m}$

PTFE membrane filters for the retention of particles $\geq 0.45 \mu\text{m}$ in organic solutions; strong acids or aldehydes

Ordering information

Membrane Material	Pore Size (μm)	Housing Material	Description	Quantity	Product Code
Nylon 66	0.2	Polypropylene	ZapCap-CR / Non Sterile	12/pk	10057-764
Nylon 66	0.45	Polypropylene	ZapCap-CR / Non Sterile	12/pk	10057-766
PTFE	0.45	Polypropylene	ZapCap-CR / Non Sterile	12/pk	10057-768

Sample Preparation

Extractor - Ethidium bromide (EtBr) waste reduction system

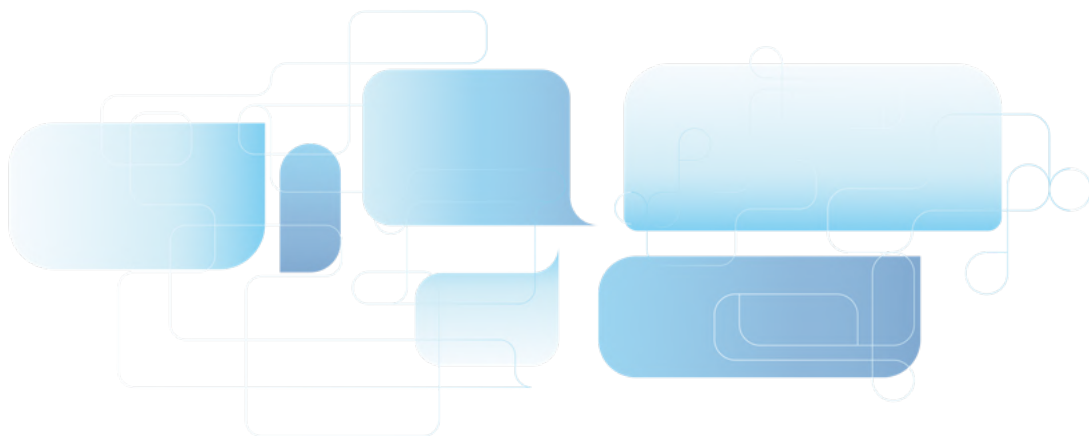
Extractor



One-step filtration polypropylene funnel device for the rapid removal of ethidium bromide from gel-staining solutions. This disposable unit contains an activated carbon matrix, which removes > 99% of ethidium bromide from electrophoretic buffer quickly and easily. Each device can decontaminate up to 10 litres of gel-staining solution. After filtration, the decontaminated solution can be safely poured down the laboratory drain. The extractor funnel device fits most standard laboratory flasks and bottles (neck size 33 to 45 mm), and the unit includes a cap for storage between uses. The polypropylene housing is chemically resistant to organics. Also included in the package are glass fiber prefilters, which remove gel pieces and other debris to avoid premature clogging of the carbon filter.

Ordering information

Product Code	Quantity	Description
10057-756	2/pk	Ethidium Bromide Extractor Waste System, Polypropylene
10057-758	6/pk	Ethidium Bromide Extractor Waste System, Polypropylene



Sample Preparation

Filter Holders for Membranes

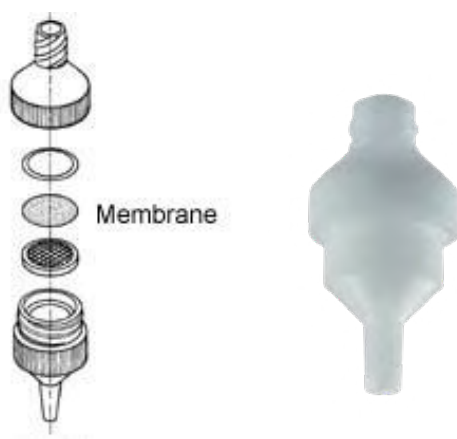
GVS offers a selection of filtration holders and apparatus that are designed to ensure precise filtration work with GVS membranes. In most applications, the filter holder is just as important as the filter for accurate results every time. Filter holders are available for a wide variety of applications including air analysis, chemotaxis, tissue culturing and general aqueous and solvent filtration.

Available products are: 13, 25, and 47 mm Filter Holder, and 47 mm Gravi-Seal.

Product Selection Guide: Filter Holders

Specifications	13 mm	25 mm	47 mm
Materials	Celcon (acetal copolymer)	Polypropylene - body & support	Polypropylene - body & support
O-rings	PTFE	Silicone	Silicone
Filter Size	13 mm	25 mm	47 mm
Prefilter Cap size	10 mm	21 mm	42 mm
Filtration Area	0.8 cm ²	3.5 cm ²	13.5 cm ²
Diameter	16 mm (0.6 in)	30 mm (1.2 in)	65.0 mm (2.6 in)
Height	35 mm (1.4 in)	30 mm (1.2 in)	50 mm (2.0 in)
Maximum Liquid Temperature	80°C (176°F)	80°C (176°F)	80°C (176°F)
Differential Pressure	2.8 bar (40 psi)	2.9 bar (42 psi)	4.9 bar (71 psi)
Autoclaving	15 minutes at 121°C (250°F) and 15 psi	20 minutes at 121°C (250°F) and 15 psi	20 minutes at 121°C (250°F) and 15 psi
Connections, Inlet	Female Luer Lock	Female Luer Lock	1/4 inch NPTM, Female Luer Slip
Connections, Outlet	Male Luer Slip	Male Luer Slip	1/4 inch NPTM, Female Luer Slip

13 mm Filter Holder, Swinney



The GVS Swinney 13 mm filter holder is optimized for small volume (1-5 mL) particulate removal from fluids dispensed with a syringe. The holder is resistant to alcohols, esters, ethers, glycols, aromatic hydrocarbons, halogenated hydrocarbons, ketones, oils, photoresists and many other chemicals. Although suitable for most weak acids and bases, we recommend that you test for compatibility with acids.

Features & Benefits

- High resistant organic components
- No need for specific tools
- Quick efficient assembly

Typical Applications

- Biofluids
- Ophthalmics
- Gas chromatography samples
- Lubricants

Ordering information

Product Code	Quantity	Description
78172-644	5/pk	Filter Holder, Swinney, 13 mm diameter

Sample Preparation

25 mm Filter Holder, Polypropylene



The GVS polypropylene 25 mm filter holders are very useful for ultra cleaning and sterilizing small volumes of liquids from a syringe. Due to the polypropylene construction, they can be used over a wide temperature range with excellent chemical compatibility. In the case of the syringe, the inlet cap locks into the base to prevent twisting damage to the membrane as the cap is tightened. Projection lugs on the base and the cap allow these units to be assembled and sealed quickly and efficiently.

Typically, the 25 mm is used to filter up to 50 mL of sample.

Ordering information

Product Code	Quantity	Description
78172-792	10/pk	Screen Support Holder, 25mm

With the syringe holder type, dual support screens prevent membrane rupture in case back pressure is applied.

It also allows for bi-directional sample flow. The polypropylene holder has a broad chemical compatibility range. It can withstand temperatures up to 121°C. and be autoclaved.

Features & Benefits

- Excellent chemical compatibility
- Quick, efficient assembly
- No need for special tools
- Excellent temperature and chemical resistance
- Several filter holders can be attached together for serial filtration

Typical Applications

- Point of use sampling
- Particulate removal
- Used in filtering chromatography solvents
- General filtration

47 mm Filter Holder, Polypropylene



The GVS polypropylene 47 mm filter holder is designed especially for ultra cleaning and sterilizing liquids under positive pressure. In addition this holder can be used for aseptic sampling of liquids or gases at point-of-use or when samples must be collected and processed on-site. The polypropylene material allows these holders to be used over a wide temperature range with excellent chemical compatibility. Sealing is achieved by simple hand

tightening of the locking ring. The 47 mm In-Line holder has dual support screens, which allow for flow in either direction. The inlet cap design and exterior locking ring allow the unit to be assembled quickly and efficiently without tearing the membrane. 3 O-rings help to prevent leaks with all membranes. The 47 mm can filter up to 1 liter depending upon the viscosity of the sample. The polypropylene holder can withstand temperatures up to 121°C and be autoclaved.

Features & Benefits

- Easy to use - unique lock ring design assures proper sealing without damage to the membrane
- Easy to clean
- Conforms with EPA Method 1311 for Toxicity Characteristic Leaching Procedure, 40 CFR, Part 261, 1991 Hazardous Waste Compliance Guide

Typical Applications

- Point of use sampling
- Particulate removal
- Used in filtering chromatography solvents
- General filtration

Ordering information

Product Code	Quantity	Description
78172-626	1/pk	Filter Holder Polypropylene, 47 mm

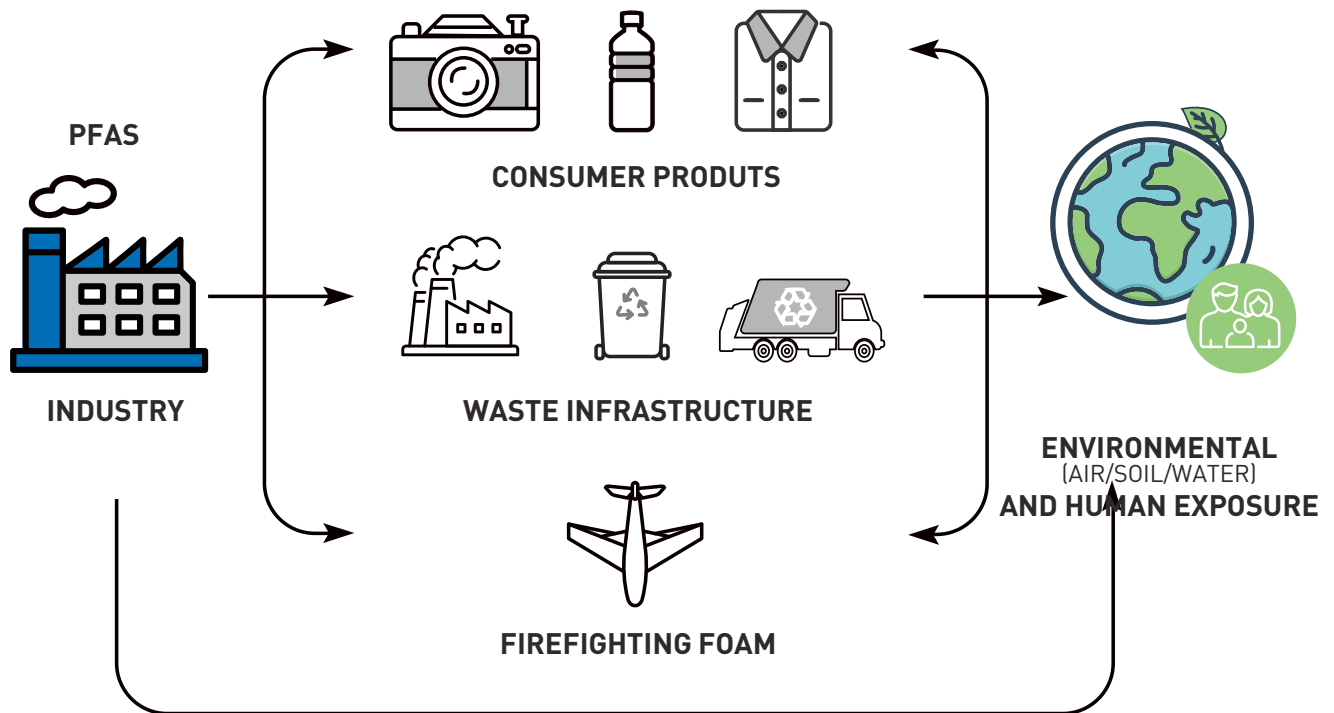
PFAS Free Products

Product Collection



Introduction

Dating to the 1940s, Per and polyfluoroalkyl substances (PFAS) consist of more than 4700 individual compounds employed across almost every domain of modern existence.



Common Uses of PFAS

- PFAS are commonly observed, persistent, and appear to be resistant to many treatment processes ("forever chemicals")
- Known for resistance to heat, water, grease, and stains
- Characterized by a chain of strong fluorine-carbon bonds
- Widely used across industrial and consumer products
- There are thousands of different PFAS

Why are we testing for PFAS Free?

Due to their usefulness, these compounds were quickly adopted and are now ubiquitous, found in food packaging, cookware, cosmetics, stain repellents, firefighting foams, and numerous manufacturing processes. Despite their immense utility, we have only recently begun to clearly grasp the health risks they pose.

The association of PFAS exposure with adverse human health and environmental outcomes necessitates accurate and precise quantification in various matrices. Numerous regulations and exposure advisories require detection at trace concentrations (low ng/L or ppt, extending to pg/L or ppq).

Introduction

Reporting a result above a regulatory limit can carry significant repercussions for the sample's origin (e.g., industrial effluent, public water supply, landfill leachate, firefighting foam discharge), even where the objective is source mitigation. Consequently, confidence in the validity of reported data—ensuring it is both representative and uncontaminated—is imperative.

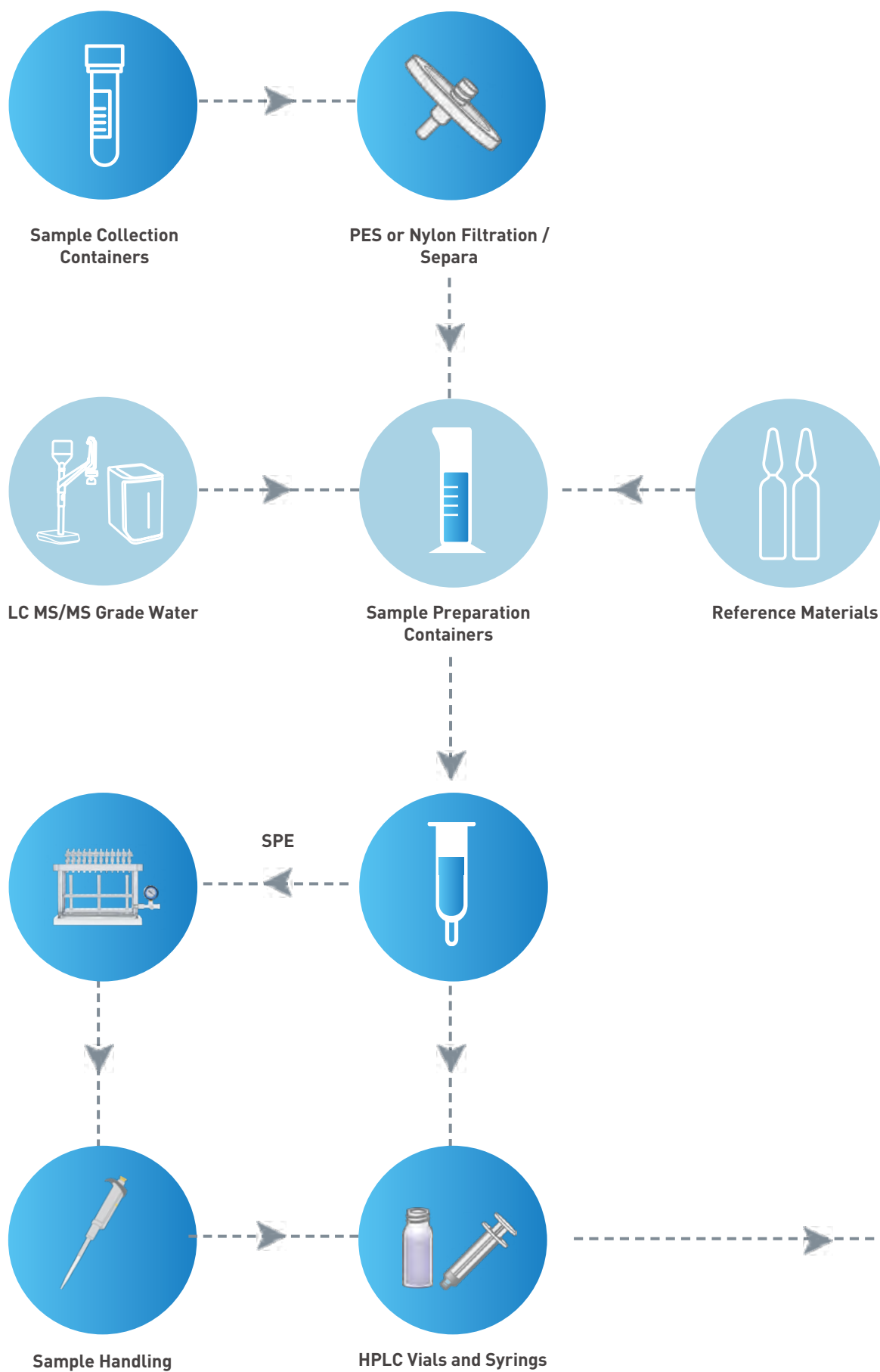


Dubbed "forever chemicals," PFAS resist natural degradation, accumulating persistently in ecosystems. This bioaccumulation drives contamination levels beyond safety thresholds, leading to chronic human exposure. Health consequences include developmental harm (e.g., low infant birth weights via placental transfer), immune suppression, carcinogenicity, and endocrine disruption through thyroid interference.

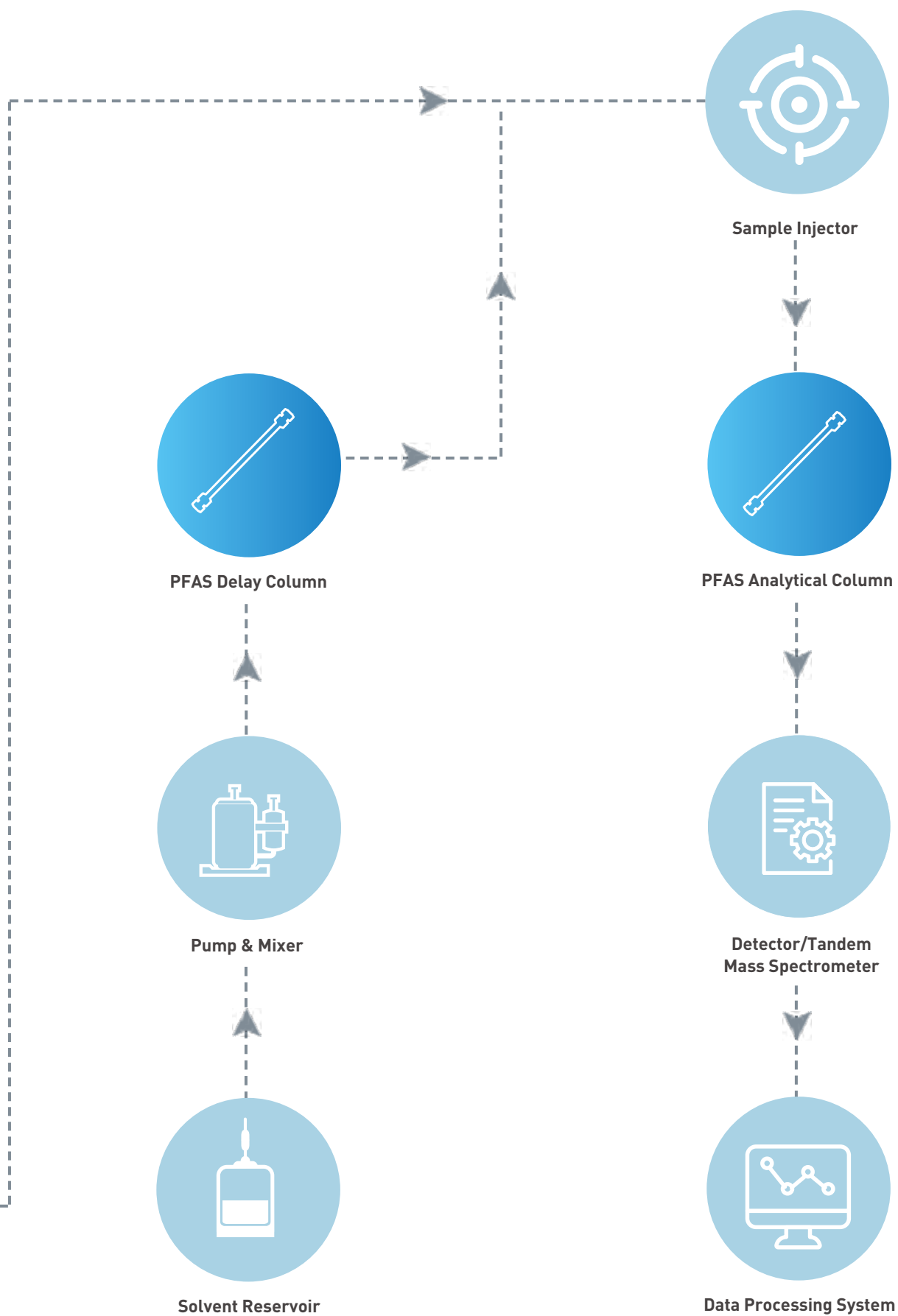
Recognizing this dual reality of utility and hazard, GVS is dedicated to equipping the scientific community. We provide essential, high-quality products and tools for the precise quantification of PFAS. Our solutions empower researchers, regulators, and testing labs in their critical work to understand and monitor PFAS exposure.

This brochure provides a comprehensive guideline of our products for PFAS analysis. These tools are applicable to environmental matrices (water, soil), food and beverage samples, and other areas. We are dedicated to enabling scientists to precisely quantify PFAS wherever they occur, thereby advancing our collective understanding of their societal consequences.

Product Across the Workflow



Product Across the Workflow



Guideline of PFAS

Key PFAS Regulatory Updates

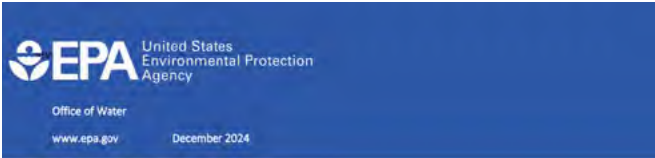
PFAS Update	US EPA HALs	EU 2022/1431	EU 2022/2388
Effective Date	15-Jun-22	2022-2025	1 Jan, 2023
Affected Matrices	Drinking water	Food/Feed	Certain foodstuff
Changes	New reporting limits and Health Advisory Limits for PFOA, PFOS, GenX, PFBS	Monitoring PFOS, PFOA, PFNA, PFHxS	PFOS, PFOA, PFNA, PFHxS, and sum of above
Impact to APAC	Possible future regulatory updates from region	Possible future regulatory updates from region	Export market for certain products of animal origin (eggs, fishery products, fish meat intended for the production of food for infants and young children and other fish meat, crustaceans, bivalve molluscs, meat and edible offal of bovine animals, sheep, pig and poultry and game animals.

PFAS Update	European Chemicals Agency (ECHA)	US EPA (Proposal for Drinking Water Regulation)
Effective Date	Proposal (public consultation on 22 Mar 2023 for 6 months)	Proposal (comment period on 29 Mar up till 30 May 2023)
Affected Matrices	All uses of PFAS	Drinking Water
Changes	To ban on both the use and production of PFAS in order to reduce the risks these substances pose to human and the environment, with a few exemptions and some temporary derogations	6 PFAS – Enforceable Max Contaminant Levels (MCLs) and non-enforceable MCL Goals (MCLGs) – Individual limits for PFOA, PFOS, and combination of PFNA, HFPO-DA (GenX), PFHxS, PFBS
Impact to APAC		Possible future regulatory updates from region

Methods for Measuring PFAS in the Environment

In January 2024, the EPA released three methods to better measure PFAS in the environment

- Final EPA Method 1633, a method to test for 40 PFAS in wastewater, surface water, groundwater, soil, biosolids, sediment, landfill leachate, and fish tissue.
- Final EPA Method 1621, which can broadly screen for the presence of chemical substances that contain carbon-fluorine bonds, including PFAS, in wastewater.
- Other Test Method (OTM)-50, which measures 30 volatile fluorinated compounds in air.



Method 1633, Revision A Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS¹

Guideline of PFAS

Determination of PFAS in Drinking Water

Analysis of PFAS is now an essential part of water testing programs and is becoming a regular requirement for monitoring in environment and food sources. As regulations continue to be created and updated, the requirements for method sensitivity have become essential. Solid phase extraction (SPE) is one tool that can be utilized to enhance sensitivity of a method by enriching the sample prior to injection. GVS utilizes mixed-mode weak anion exchange reversed-phase adsorbent (WAX) solid-phase extraction columns for enrichment and purification, and the UHPLC C18 liquid chromatography column for separation and detection.

Chromatographic column: C18 column

(HCA018U021X050UAA, 2.1 * 50 mm, 1.8 µm)

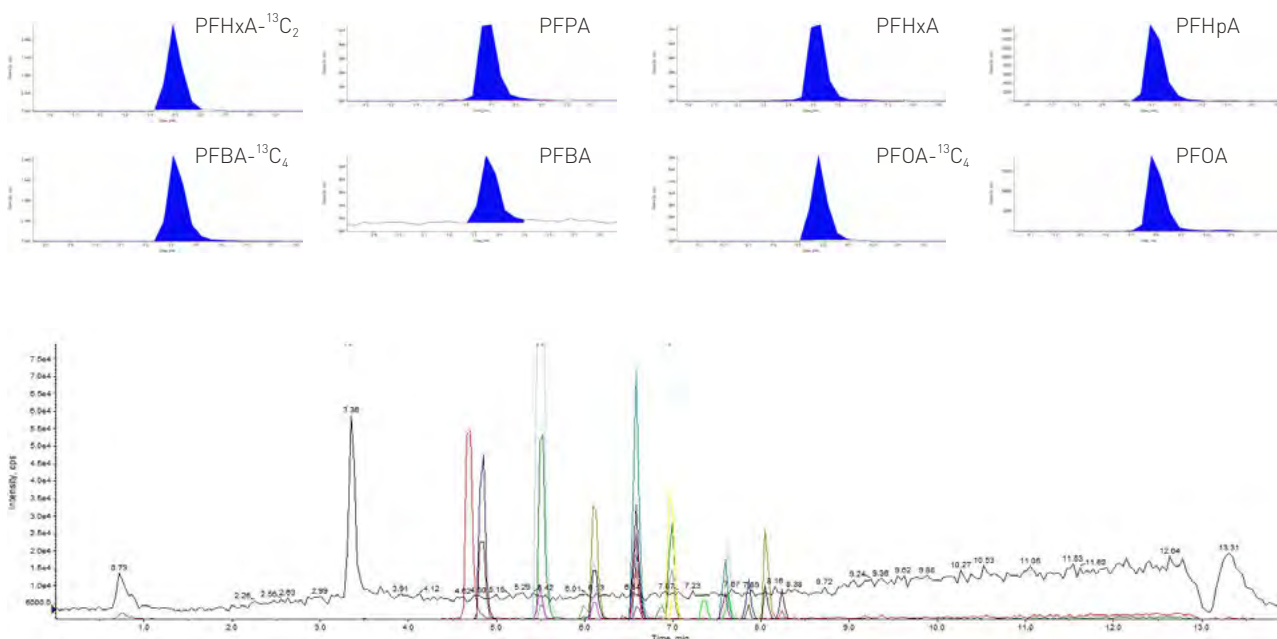
Mobile phase: A is methanol, B is a 5 mmol/L ammonium acetate

Flow rate: 0.3 mL/min.

Column temperature: 40°C.



- Pre-treatment: Add ammonium acetate; Adjust pH to 6.8-7
- Condition: 5 mL of 0.1% ammonium hydroxide in MeOH; 7 mL of MeOH; 10 mL of Water
- Load: Load sample into the SPE-WAX, flow rate 8 mL/min
- Wash: 5 mL of 0.025 mol/L ammonium acetate solution (pH=4); 12 mL of water; Dry cartridge for 15 minutes.
- Elution: 4 mL of MeOH; 6 mL of 0.1% ammonium hydroxide in MeOH



Chromatogram of the mixed standard solution (2 µg/L)

Guideline of PFAS

Analysis of Per- and polyfluoroalkyl substances (PFAS) in Fish

Per- and polyfluoroalkyl substances (PFAS) have been increasingly detected in complex food matrices such as fish, meat, and other animal-derived products. Given the dietary exposure risks — especially highlighted by EFSA's 2020 study — the development of improved analytical methods has become essential. As concerns about human exposure continue to grow, various countries are conducting studies on PFAS contamination in food. In this context, we have evaluated a quantitative analysis method for PFAS compounds in fish samples.



Step 1 Sample Preparation

- Weigh 2 g of sample
- Add 10 mL of 0.05M KOH in MeOH
- Shake gently for 16 hrs. and centrifuge, transfer to new tube/1
- Add 10 mL of ACN, sonicate 30 mins, centrifuge, transfer to new tube/1 (combine)



Step 2 Sample Preparation

- Add 10 mL of 0.05M KOH in MeOH, shake 5 mins, centrifuge, transfer to new tube/1 (combine)
- Add 1 mL of water
- Concentrate to 2.5 mL
- Reconstitute up to 50 mL with water
- Adjust pH to approx. pH6



Step 3 SPE Procedure

- Condition **WAX SPE** with 15mL 1% ammonium hydroxide in MeOH and 5 mL of 0.3 M formic acid
- Load sample
- Wash with 10 mL DI, 5 mL of 1:1 0.1M formic acid/methanol
- Place clean collection tubes inside the manifold



Step 4 SPE Procedure

- Rinse the sample bottle with 5 mL of 1% methanolic ammonium hydroxide transfer the rinse to the SPE reservoir and elute
- Add 25 µL of concentrated acetic acid
- Filter with 0.2-µm nylon.
- LC-MS/MS

Guideline of PFAS

Analysis of 28 PFAS Compounds in Soil

Per- and polyfluoroalkyl substances (PFAS) are man-made pollutants known for their persistence and ability to accumulate in the environment and living organisms. PFAS enter the environment through various sources, including food packaging and manufacturing processes, posing significant health risks due to their presence in water, soil, and biological systems. In this application note, a SPE method according to EPA Method 1633 using WAX SPE is presented. High recovery rates with very good reproducibility are achieved for drinking water matrices.



Step 1 Sample Preparation

- Weigh 5 g of sample
- Add 10 mL of 0.3% ammonium hydroxide in MeOH
- Shake 30 mins and centrifuge, transfer to new tube/1
- Add 15 mL of 0.3% ammonium hydroxide in MeOH
- Shake 30 mins and centrifuge, transfer to new tube/1



Step 2 Sample Preparation

- Add 5 mL of 0.3% ammonium hydroxide in MeOH
- Shake 30 mins and centrifuge, transfer to new tube/1
- Concentrate to 7 mL
- Reconstitute up to 50 mL with water
- Adjust pH to approx. pH6



Step 3 SPE Procedure

- Condition **WAX SPE** with 15 mL 1% ammonium hydroxide in MeOH and 5 mL of 0.3 M formic acid
- Load sample
- Wash with 10 mL DI, 5 mL of 1:1 0.1M formic acid/methanol
- Place clean collection tubes inside the manifold



Step 4 SPE Procedure

- Rinse the sample bottle with 5 mL of 1% methanolic ammonium hydroxide transfer the rinse to the SPE reservoir and elute
- Add 25 µL of concentrated acetic acid
- Filter with 0.2-µm nylon.
- LC-MS/MS

PFAS Free Products

ABLUO® Syringe Filters



- Housing injected in Polypropylene or Acrylic
- Multifunctional Syringe Filters: equipped with luer-lock or luer-slip male connections for different applications
- 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
- Quick and efficient filtration of samples and all kind of solutions, solvents or gases
- Steril: No

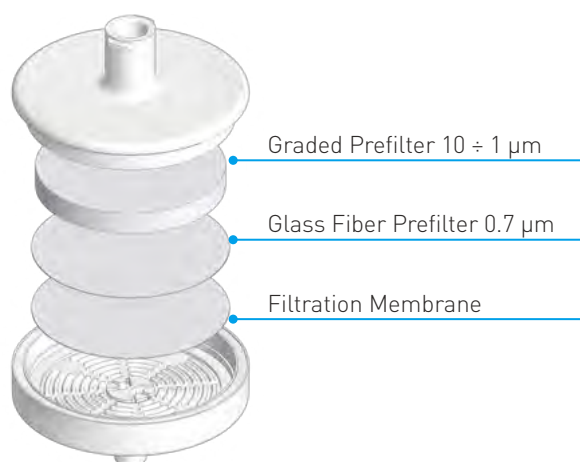


Ordering information

Membrane Material	Membrane Diameter	Pore Size (µm)	End Fitting	Housing Material	Color	Packaging	Product Code
Cellulose Acetate (CA)	13mm	0.22	FLL/MLL	Acrylic	Blue	100/PK	78562-340
Cellulose Acetate (CA)	13mm	0.45	FLL/MLL	Acrylic	Yellow	100/PK	78562-102
Cellulose Acetate (CA)	13mm	0.8	FLL/MLL	Acrylic	Green	100/PK	78562-398
Cellulose Acetate (CA)	13mm	1.2	FLL/MLL	Acrylic	Red	100/PK	78562-192
Cellulose Acetate (CA)	13mm	5	FLL/MLL	Acrylic	Brown	100/PK	78562-194
Cellulose Acetate (CA)	25mm	0.22	FLL/MLL	Acrylic	Blue	100/PK	78562-496
Cellulose Acetate (CA)	25mm	0.45	FLL/MLL	Acrylic	Yellow	100/PK	78562-068
Cellulose Acetate (CA)	25mm	0.8	FLL/MLL	Acrylic	Green	100/PK	78562-346
Cellulose Acetate (CA)	25mm	1.2	FLL/MLL	Acrylic	Red	100/PK	78562-544
Cellulose Acetate (CA)	25mm	5	FLL/MLL	Acrylic	Brown	100/PK	78562-566
Nylon 66 (NY)	13mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-226
Nylon 66 (NY)	13mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-306
Nylon 66 (NY)	25mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-412
Nylon 66 (NY)	25mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-314
Regenerated Cellulose (RC)	13mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-436
Regenerated Cellulose (RC)	13mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-424
Regenerated Cellulose (RC)	25mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-488
Regenerated Cellulose (RC)	25mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-430
Polyethersulfone (PES)	13mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-124
Polyethersulfone (PES)	13mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-606
Polyethersulfone (PES)	25mm	0.22	FLL/MLS	Polypropylene	Transparent	100/PK	78562-108
Polyethersulfone (PES)	25mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-300
Glass Fiber (GF)	25mm	0.45	FLL/MLS	Polypropylene	Transparent	100/PK	78562-160
Glass Fiber (GF)	25mm	0.7	FLL/MLS	Polypropylene	Transparent	100/PK	78562-558
Glass Fiber (GF)	25mm	1	FLL/MLS	Polypropylene	Transparent	100/PK	78562-382
Glass Fiber (GF)	25mm	1.2	FLL/MLS	Polypropylene	Transparent	100/PK	78562-254
Glass Fiber (GF)	25mm	3.1	FLL/MLS	Polypropylene	Transparent	100/PK	78562-188

PFAS Free Products

ABLUO® Supreme



Characteristics

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	Packaging	Product Code
RC	0.2	FLL/MLS - PP GF/F/RC 0.7/0.22µm CLR	10/PK	78562-400
RC	0.45	FLL/MLS - PP GF/F/RC 0.7/0.45µm CLR	10/PK	78562-338
PES	0.2	FLL/MLS - PP GF/F/PES 0.7/0.22µm CLR	10/PK	78562-058
PES	0.45	FLL/MLS - PP GF/F/PES 0.7/0.45µm CLR	10/PK	78562-088
NY	0.2	FLL/MLS - PP GF/F/NY 0.7/0.22µm CLR	10/PK	78561-990
NY	0.45	FLL/MLS - PP GF/F/NY 0.7/0.45µm CLR	10/PK	78562-536
CA	0.2	FLL/MLS - PP GF/F/CA 0.7/0.22µm CLR	10/PK	78562-136
CA	0.45	FLL/MLS - PP GF/F/CA 0.7/0.45µm CLR	10/PK	78562-152

SEPARA® Syringeless Filters



- 2 simple steps for sample preparation
- Designed and compatible for use with all HPLC or UHPLC autosampler
- Syringeless filter vials integrates syringe, filtration membrane, auto sampler vial and cap/septa



Ordering information

Membrane Material	Pore Size(µm)	Color	Packaging	Product Code
Regenerated Cellulose (RC)	0.2	Gray	100/PK	78562-414
Regenerated Cellulose (RC)	0.45	Black	100/PK	78562-452
Nylon (NY)	0.2	Light Blue	100/PK	78562-354
Nylon (NY)	0.45	Blue	100/PK	78562-428
Polyethersulfone (PES)	0.2	Light Green	100/PK	78562-186
Polyethersulfone (PES)	0.45	Dark Green	100/PK	78562-586

PFAS Free Products

Laboratory Syringes Precision and Control for Accurate Lab Work

Features

- High transparent PP material for tube and plunger. Designed for easy operation and smooth plunger movement, ensuring accurate fluid transfer with minimal force.
- Manufactured with high-quality materials that resist chemical degradation, making them compatible with various solutions.
- Available with luer lock or luer slip fittings to ensure secure connections, preventing leaks during liquid handling.



Parts: Barrel+Piston+Plunger; Latex-free, PVC-free
High transparent PP material for tube and plunger

Ordering information

Product Code	Description	Packaging
78562-216	Disposal Plastic Syringe, 1mL,Luer lock, No Sterile, Bulk Pack	100pcs/pack 48packs/case
78562-156	Disposal Plastic Syringe, 1mL,Luer slip, No Sterile,Bulk Pack	100pcs/pack 48packs/case
78561-994	Disposal Plastic Syringe, 5mL,Luer lock, No Sterile,Bulk Pack	100pcs/pack 32packs/case
78562-444	Disposal Plastic Syringe, 5mL,Luer slip, No Sterile,Bulk Pack	100pcs/pack 32packs/case

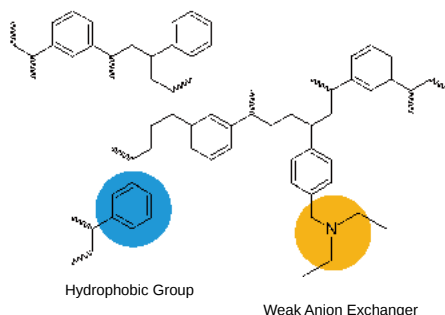
SPE Cartridge

WAX for PFAS - WAX SPE is a powerful and versatile solution designed for the selective extraction of acidic compounds like PFAS from environmental samples. With its dual retention mechanism (ion exchange + hydrophobic interaction), WAX SPE delivers superior sample cleanup and analyte concentration—perfectly suited for LC-MS/MS analysis.

- High recovery and precision for both short- and long- chain PFAS
- Reduces background noise, enhancing detection sensitivity
- Compliant with EPA Methods 533, 537.1, and 1633
- Streamlined workflow for reliable results in every matrix

Ordering information

Product Code	Description	Method	Packaging
78562-518	150mg/6mL	1633,ISO 21675:2019	30 pcs/box
78562-072	200mg/6mL	533	30 pcs/box
78562-320	500mg/6mL	533	30 pcs/box



PFAS Free Products

Centrifuge Tube



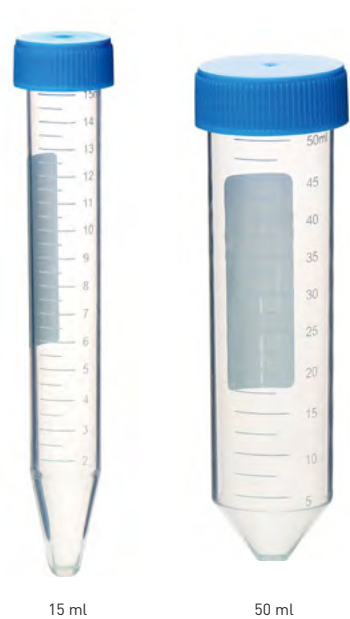
- Consistent biological and physical properties, High transparent, medical grade PP material with flat caps for marking.
- RCF rating up to 12,000 xg.
- Easy-to-read printed graduations and a large white frosted area for labelling.
- Leak-proof.
- Packed in convenient durable racks or reusable Zip-lock bags.

15 ml DIM. 17x120 mm, Printed graduation range from 1.5 to 15 ml, interval at 0.5 ml

Product Code	Sterile	Packaging
78562-176	Non sterile	50 pcs/zip-lock bag, 500 pcs/carton

50 ml DIM. 30x115 mm, Printed graduation range from 5 to 47.5 ml, interval at 2.5 ml

Product Code	Sterile	Packaging
78562-018	Non sterile	25 pcs/zip-lock bag, 500 pcs/carton



50 ml Self-standing, DIM. 30x117 mm, Printed graduation range from 5 to 47.5 ml, interval at 2.5 ml

Product Code	Sterile	Packaging
78562-164	Non sterile	25pcs/zip-lock bag, 500pcs/carton

50 ml Self-standing, DIM. 30x107 mm, blue cap, Printed graduation range from 5 to 50 ml, interval at 5 ml

Product Code	Sterile	Packaging
78562-086	Non sterile	25 pcs/zip-lock bag, 500 pcs/carton



PFAS Free Products

Plastic Pasteur Pipette

Ideal for transferring and dispensing small amounts of liquid safely and rapidly. LDPE material, excellent transparency.

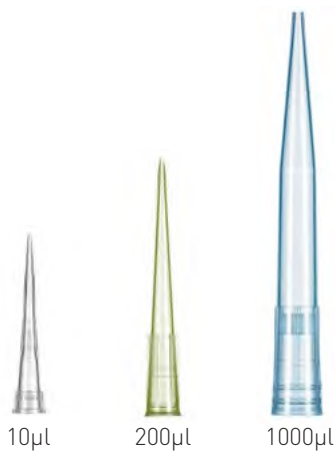


With Graduation

Product Code	Length(mm)	Graduation	Overall Vol(ml)	Sterile	Packaging
78562-144	145	1/4mL up 1 mL	5	Non Sterile	Individual peel-pack, 50x100pcs/ dispenser box /carton

Universal Pipette Tips

Automated pipette tips are compatible with a variety of automated pipetting workstations and automated sampling systems. They are used to distribute and transfer liquids to help complete high-throughput operation of biological samples. Universal pipette tips are made with high precision molds.



Ordering information

Sort	Name	Product Code	Packaging
10µl	10µl universal pipette tip	78562-500	1000 pcs/bag, 20 bag/ctn
		78562-290	96 pcs/box, 50 box/ctn
200µl	200µl Yellow universal pipette tip	78562-590	1000 pcs/bag, 20 bag/ctn
		78562-020	96 pcs/box, 50 box/ctn
1000µl	1000µl Blue universal pipette tip	78562-534	1000 pcs/bag, 5 bag/ctn
		78562-352	96 pcs/box, 50 box/ctn
5ml	5ml universal pipette tip(EP)	78561-978	100pcs/bag,10bag/ctn
		78562-596	24/box, 8box/medium box, 2medium box/ctn

PFAS Free Products

Solution Bottle

GVS solution bottles are made of high-quality polypropylene PP/high-density polyethylene HDPE raw materials, consistent wall thickness and smooth interior and exterior surfaces, non-biotoxin, produced in a 100,000-class clean room production environment, multiple quality system certifications. These bottles are ideal for both field sampling, general lab use, and are easily transportable.



Features

Durable, uniform wall thickness

One-time blow molding, no seams, advanced molding technology ensures the bottle has a more uniform wall thickness, high-quality bottle wall to ensure that the bottle wall can effectively prevent breakage or puncture the bottom, the bottle bottom is flat, which is beneficial to the filling line runs smoothly.

Leakproof design

The mouth of the bottle cap is designed to prevent leakage. Repeated opening and tightening will not affect the sealing performance of the bottle.

Ordering information

Product Code	Description	Material	Color	Package
78562-562	Wide mouth, 8ml packaging bottle	HDPE	Natural	2000
78562-582	Wide mouth, 15ml packaging bottle	HDPE	Natural	1500
78562-344	Wide mouth, 30ml packaging bottle	HDPE	Natural	800
78562-442	Wide mouth, 60ml packaging bottle	HDPE	Natural	800
78562-396	Wide mouth, 125ml packaging bottle	HDPE	Natural	500
78562-406	Wide mouth, 250ml packaging bottle	HDPE	Natural	250
78562-208	Wide mouth, 500ml packaging bottle	HDPE	Natural	125
78562-468	Wide mouth, 1000ml packaging bottle	HDPE	Natural	50
78562-524	Narrow mouth, 30ml packaging bottle	HDPE	Natural	800
78562-514	Narrow mouth, 60ml packaging bottle	HDPE	Natural	800
78562-330	Narrow mouth, 125ml packaging bottle	HDPE	Natural	500
78562-122	Narrow mouth, 250ml packaging bottle	HDPE	Natural	250
78562-178	Narrow mouth, 500ml packaging bottle	HDPE	Natural	125
78562-384	Narrow mouth, 1000ml packaging bottle	HDPE	Natural	50

Trouble Shooting Tips and Tools

1. Contamination Issues

Problem

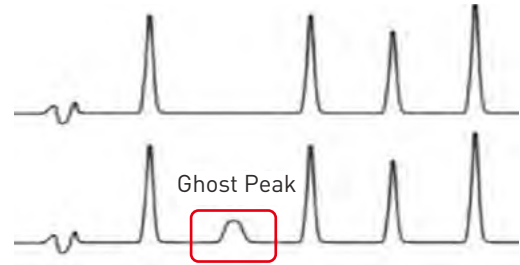
Elevated background levels of PFAS

Tips

- Use PFAS-free verified consumables (vials, caps, filters, SPE, solvents).
- Avoid PTFE-based materials (tubing, caps, liners).
- Pre-rinse all glassware and plasticware with methanol or acetonitrile.

Tools

- PFAS-free sample kits
- Blank extraction controls (method, reagent, and system blanks)



2. Poor Recovery or Low Sensitivity

Problem

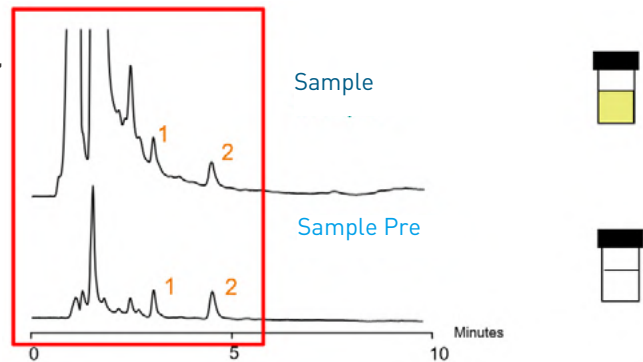
Loss of target PFAS compounds during sample prep

Tips

- Optimize SPE procedure (pH adjustment, washing steps, elution strength).
- Monitor drying time on SPE to prevent breakthrough.
- Use isotopically labeled internal standards.

Tools

- Weak Anion Exchange (WAX) SPE cartridges
- Internal standard mix
- LC-MS/MS optimization guide



3. Retention Time Shifts

Problem

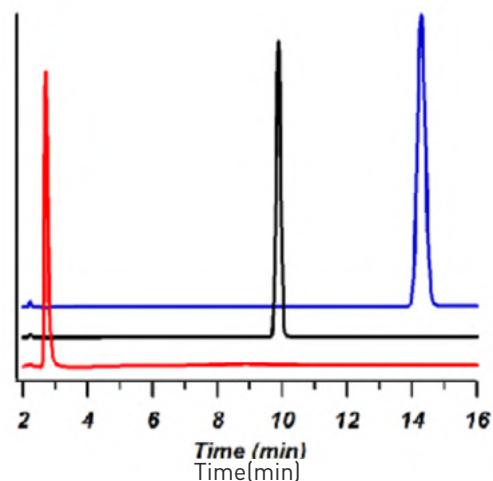
Problem: Inconsistent chromatographic separation

Tips

- Ensure column equilibration and stable flow rate.
- Check mobile phase pH and composition.
- Use delay column to separate background contamination.

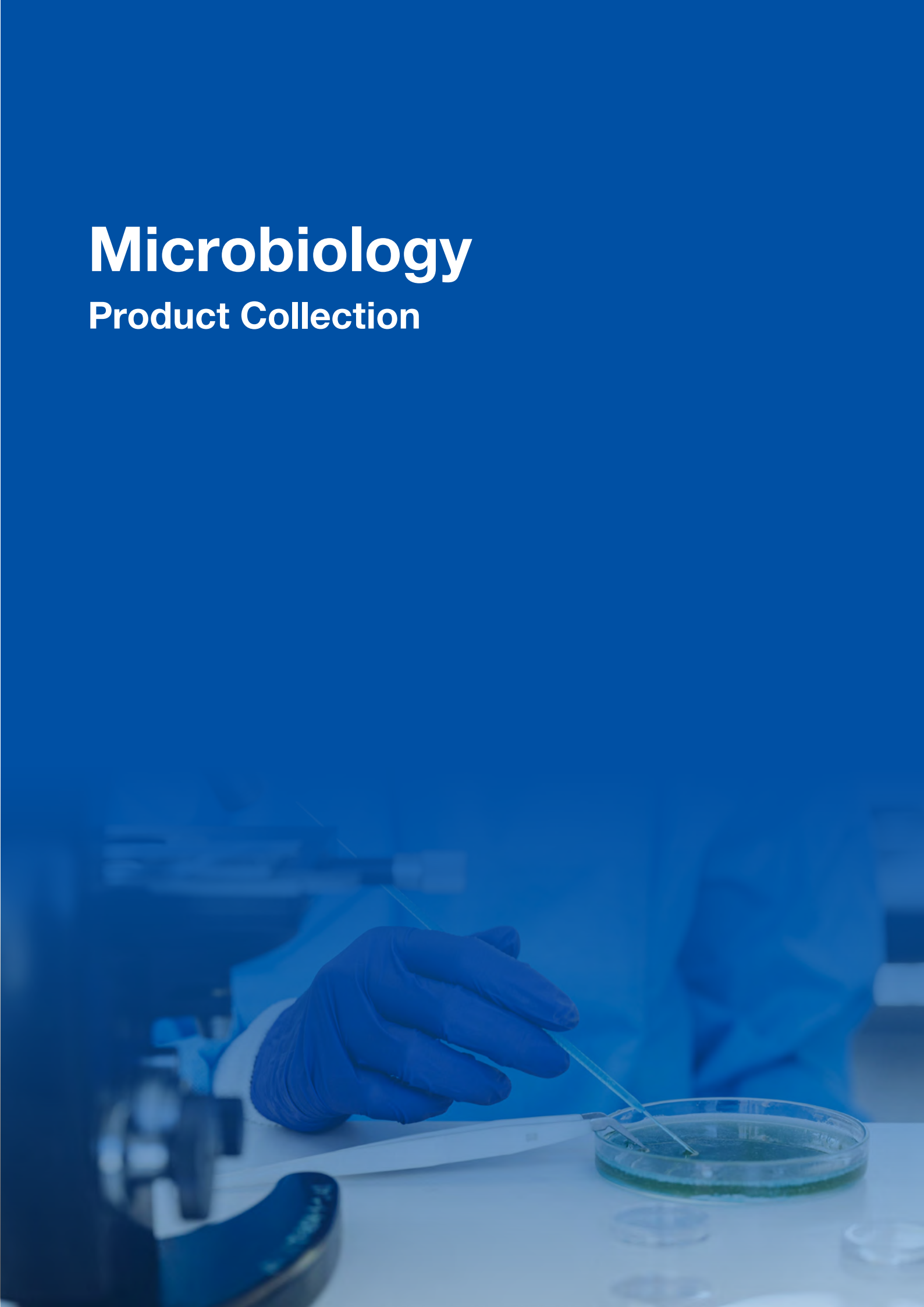
Tools

- High-quality PFAS analytical columns
- Guard column and delay column (to trap system PFAS)



Microbiology

Product Collection



Membranes For Filtration

GVS Filter Technology is a fully integrated producer and supplier of microbiological solutions for the laboratory and testing community.

Microbiological testing includes the controlled analysis of water, beverage, food, pharmaceuticals and other consumer products and their processing equipment to evaluate for the presence of micro-organisms that may cause harm to the user or reduce the product quality or performance.

Microbiological testing is a crucial requirement across many industries worldwide where product, process and human health are influenced by the presence of micro-organisms: living bacteria, viruses, yeasts and molds that are too small to be visible to the naked eye.

International test procedures and standard lab practices have been established to provide strict methods for micro-organism analysis and identification.

Micro-organisms can be harmful or beneficial to the product or process under analysis.

Some diseases of human, animals and plants are caused by unwanted bacteria, yeasts and mold. Other beneficial yeasts and molds are responsible for numerous desirable processes in beer, wine, and food production and biotechnology.



GVS products for microbiological testing include applications and testing for:

- ◆ **Contamination of work surfaces and equipment**

- ◆ **Microbiological analysis of:**

- ◆ Potable water
- ◆ Beer and wine
- ◆ Waste water
- ◆ Dairy products
- ◆ Soft drink and concentrates
- ◆ Fruit juices
- ◆ Fermented products

- ◆ **Detection of:**

- ◆ Bacteria, fungi, molds
- ◆ Escherichia coli (E.Coli)
- ◆ Fecal streptococci and fecal coliforms
- ◆ Staphylococci
- ◆ Listeria
- ◆ Enterococci
- ◆ Pseudomonas aeruginosa
- ◆ Legionella

Membranes For Filtration

Pore size selection guide

The technical requirements for membranes used in microbiological quality control are subject to strict national and international standards. At the same time the requirements of the market is continually changing as a result of the introduction of new products.

GVS provides a wide and versatile range of membrane filter products to supply the market needs. Our R&D department is continually developing new products for the evolving markets. All GVS membranes consist of high quality materials with a high degree of biocompatibility and are manufactured in ISO certified facilities to ensure reliable performance each and every time.

Test strains: Bacteria/ Yeasts	Pore size [µm]			Used for Validation	Standards
	0,2	0,45	0,8		
Brevundimonas diminuta	x				DSM 1635
Pseudomonas diminuta	x			x	ATCC 19146
Escherichia coli (E. coli)	o	x		x	ATCC 29522
Lactobacillus fermentum	o	x			ATCC 9338
Pseudomonas aeruginosa	x				ATCC 10145
Staphylococcus aureus	o	x		x	ATCC 25923
Enterococcus faecalis	o	x			ATCC 19433
Enterobacter aerogenes	o	x			ATCC 13048
Serratia marcescens	o	x		x	ATCC 14756
Streptococcus faecalis	o	x			ATCC 19433
Pediococcus cerevisiae	o	o	x		ATCC 43013
Pediococcus acidilactici	o	x			ATCC 33314
Legionella pneumophila	x				ATCC 33153
Bacillus subtilis	o	o	x	x	ATCC 6633
Salmonella abony	o	x			NCTC 6017
Saccharomyces cerevisiae	o	o	x	x	DSM 1848
Candida albicans	o	o	x		ATCC 10231
Zygosaccharomyces bailii	o	o	x		ATCC 42476
Aspergillus niger	o	o	x		ATCC 16404
Total count detection		x			

x=recommended pore size

o=alternative pore size

Liquid Media

Nutrient Liquid Media for Culturing and Enumeration

GVS provides an extensive range of culture broths and solutions for the cultivation, detection and enumeration of bacteria, yeast, fungi, viruses, pathogens and molds. Each nutrient rich liquid media is specifically developed for use in the analysis of drinking water, surface water, milk, juice, beverages, sugar based drinks, food and pharmaceutical samples. These ready to use liquid medias are packaged in individual pre-portioned ampoules for ease of use. All liquid medias undergo detailed quality control checks in accordance with standard methods, guaranteeing uniform preparation every time. Comprehensive end product testing ensures a stable sterile liquid media for optimal culture growth.

Quick Media Selection Guide for Common Evaluation Processes and Micro-Organisms Water, wastewater and purified water

Quality control systems for wastewater analysis and production systems using water. Typical organisms include Pseudomonads, Escherichia coli, Staphylococci, spore formers, yeasts and molds.

Selective microorganism	Positive test organism	Media	Product No.
Acid-tolerant micro-organisms Lactic-acid bacteria	Lactobacillus fermentum (ATCC 9338) Candida albicans (ATCC 10231)	Orange Serum Broth	10057-684
Aerobic bacteria	Escherichia coli (E.coli) (ATCC 25922)	HPC Broth HPC Broth with TTC M-TGE Total Count Broth Total Count Media with TTC	10057-676 10057-678 10057-670 10057-694
Total Coliforms and Escherichia coli	Escherichia coli (E.coli) (ATCC 25922)	EC Broth M-Endo Coliform Broth M-FC Broth M-FC Broth with Rosolic Acid MI Broth EC Broth with MUG M-TGE Total Count Broth	10057-628 10057-654 10057-656 10057-658 10057-666 10057-630 10057-670
Enterococci	Enterococci faecalis (ATCC 19433)	Enterococcus Broth	78562-618
Fecal Streptococci	Escherichia coli (E.coli) (ATCC 25922) Streptococcus faecalis (ATCC 19433)	KF-Streptococcus Broth	10057-650
Pseudomonas aeruginosa	Pseudomonas aeruginosa (ATCC 10145)	Cetrimide Broth Pseudomonas Broth	10057-618 10057-688
Yeast and Mold	Zygosaccharomyces bailii (ATCC 58445) Candida albicans (ATCC 10231)	PRY Broth (Preservative Resistant Yeast) M-Green Select Broth M-Green Yeast and Mold Broth	10057-686 10057-660 10057-662

Soft drinks, fruit juices, concentrates and sugar products

Due to different pHs and carbonation levels the nutrient media for detection of these contaminants are very specific.

Selective microorganism	Positive test organism	Media	Product No.
Acid-tolerant micro-organisms Lactic-acid bacteria Lactobacillus, Oenococcus (product spoiling organisms)	Lactobacillus fermentum (ATCC 9338) Candida albicans (ATCC 10231)	Orange Serum Broth Wallerstein Differential Broth (WLD)	10057-684 10057-720
Aerobic bacteria	Escherichia coli (E.coli) (ATCC 25922)	HPC Broth HPC Broth with TTC M-TGE Total Count Broth Total Count Media with TTC	10057-676 10057-678 10057-670 10057-694
Total Coliform and Escherichia coli	Saccharomyces cerevisiae (ATCC 9763)	M-Endo Coliform Broth MI Broth EC Broth with MUG M-TGE Total Count Broth	10057-654 10057-666 10057-630 10057-670

Liquid Media

Selective microorganism	Positive test organism	Media	Product No.
Pseudomonas aeruginosa	Pseudomonas aeruginosa (ATCC 10145)	Cetrimide Broth Pseudomonas Broth	10057-618 10057-688
Yeast and Mold	Zygosaccharomyces bailii (ATCC 58445) Candida albicans (ATCC 10231)	PRY Broth (Preservative Resistant Yeast) M-Green Select Broth M-Green Yeast and Mold Broth	10057-686 10057-660 10057-662

Beer and Wine

Beer quality control is focused on beer spoiling bacteria like Lactobacilli and Pediococci as well as wild yeast.

Wine quality control is focussed on taste spoiling organisms including acid tolerant species like acetic acid bacterial and lactic acid bacterial as well as yeast and mold.

Selective microorganism	Positive test organism	Media	Product No.
Acetobacter		Orange Serum Broth (add 5-8% ethanol)	10057-684
Aerobic bacteria	Escherichia coli (E.coli) (ATCC 25922)	Total Count Media with TTC	10057-694
Bacteria in fermentation processes		Wallerstein Differential Broth (WLD)	10057-720
Total Coliform and Escherichia coli	Saccharomyces cerevisiae (ATCC 9763) Escherichia coli (E.coli) (ATCC 25922)	M-Endo Coliform Broth MI Broth	10057-654 10057-666
Lactobacilli, Pediococci (beer spoiling organisms)	Lactobacillus fermentum (ATCC 9338) Candida albicans (ATCC 10231)	Orange Serum Broth Wallerstein Differential Broth (WLD)	10057-684 10057-720
Yeast and Mold	Zygosaccharomyces bailii (ATCC 58445) Saccharomyces cerevisiae (ATCC 9763)	PRY Broth (Preservative Resistant Yeast) Wallerstein Nutrient Broth (WLN)	10057-686 10057-702

Dairy Products

Dairy quality control is focused on the presence of bacteria, yeasts and mold and milk borne diseases. E.coli and Streptococci in dairy products may cause illness or spoilage. Other beneficial bacteria may be specifically added to milk for fermentation to produce products like yogurt and cheese.

Selective microorganism	Positive test organism	Media	Product No.
Aerobic bacteria	Escherichia coli (E.coli) (ATCC 25922)	HPC Broth HPC Broth with TTC M-TGE Total Count Broth Total Count Media with TTC	10057-676 10057-678 10057-670 10057-694
Total Coliform and Escherichia coli	Saccharomyces cerevisiae (ATCC 9763) Escherichia coli (E.coli) (ATCC 25922)	M-Endo Coliform Broth EC Broth MI Broth	10057-654 10057-628 10057-666
Enterococci	Enterococci faecalis (ATCC 19433)	Enterococcus Broth	10057-618
Fecal Streptococci	Streptococcus faecalis (ATCC 19433)	KF-Streptococcus Broth	10057-650
Lactobacillus	Lactobacillus plantarum (ATCC 8014) Lactobacillus fermentum (ATCC 9338)	MRS Broth Wallerstein Differential Broth (WLD)	10057-668 10057-720

Liquid Media

Food

Quality control systems for raw materials and final product. Typical organisms include Pseudomonads, Escherichia coli, Staphylococci, Streptococci, yeasts and molds.

Selective microorganism	Positive test organism	Media	Product No.
Acid-tolerant micro-organisms	Lactobacillus fermentum [ATCC 9338] Candida albicans [ATCC 10231]	Orange Serum Broth	10057-684
Aerobic, facultative, anaerobic bacteria and fungi	Escherichia coli (E.coli) [ATCC 25922]	Total Count Media with TTC Trypticase Soy Broth (TSB)- Single Strength Trypticase Soy Broth (TSB) - Double Strength	10057-694 10057-698 10057-700
Total Coliform and Escherichia coli	Saccharomyces cerevisiae [ATCC 9763] Escherichia coli (E.coli) [ATCC 25922]	M-Endo Coliform Broth EC Broth EC Broth with MUG MI Broth	10057-654 10057-628 10057-630 10057-666
Enterococci	Enterococci faecalis [ATCC 19433]	Enterococcus Broth	78562-618
Fecal Streptococci	Streptococcus faecalis [ATCC 19433]	KF-Streptococcus Broth	10057-650
Lactobacillus, especially in meat	Lactobacillus plantarum [ATCC 8014] Lactobacillus fermentum [ATCC 9338]	MRS Broth	10057-668
Pseudomonas aeruginosa	Pseudomonas aeruginosa [ATCC 10145]	Cetrimide Broth Pseudomonas Broth	10057-618 10057-688
Yeast and Mold	Zygosaccharomyces bailii [ATCC 58445] Saccharomyces cerevisiae [ATCC 9763]	PRY Broth (Preservative Resistant Yeast) Wallerstein Nutrient Broth (WLN)	10057-686 10057-702

Pharmaceuticals, Raw Materials, Cosmetics

Quality control systems for raw materials and production systems using water. Typical organisms include Pseudomonads, Escherichia coli, Staphylococci, Streptococci, yeasts and molds.

Selective microorganism	Positive test organism	Media	Product No.
Aerobic, facultative, anaerobic bacteria and fungi	Escherichia coli (E.coli) [ATCC 25922]	Total Count Media with TTC Trypticase Soy Broth (TSB)- Single Strength Trypticase Soy Broth (TSB) - Double Strength	10057-694 10057-698 10057-700
Total Coliform and Escherichia coli	Saccharomyces cerevisiae [ATCC 9763]	M-Endo Coliform Broth MI Broth	10057-654 10057-666
Enterococci	Enterococci faecalis [ATCC 19433]	Enterococcus Broth	78562-618
Fecal Streptococci	Streptococcus faecalis [ATCC 19433]	KF-Streptococcus Broth	10057-650
Pseudomonas aeruginosa	Pseudomonas aeruginosa [ATCC 10145]	Cetrimide Broth Pseudomonas Broth	10057-618 10057-688
Yeast and Mold	Zygosaccharomyces bailii [ATCC 58445] Saccharomyces cerevisiae [ATCC 9763]	PRY Broth (Preservative Resistant Yeast) Wallerstein Nutrient Broth (WLN)	10057-686 10057-702

Liquid Media

Nutrient Liquid Media



2 mL ampouled media

Features & Benefits

- Wide range of products satisfies even special customer requirements
- Optimal media stability, sterility, and reproducibility
- Less time-consuming, higher productivity
- Batch-specific quality certificate in each pack

Liquid Media Descriptions

Brilliant Green Bile Broth 2%

Brilliant Green Bile Broth is used to detect coliforms in water, milk and other samples. BGGB contains two inhibitors of both gram-positive and selected gram-negative organisms, namely, oxgall and brilliant green dye. Fermentation is detected by gas production.

Cetrimide Broth

Cetrimide Broth is used for selective cultivation of *Pseudomonas aeruginosa*. *Pseudomonas aeruginosa* is characterized by the production of pyocyanin (a blue green, water soluble, non-fluorescent, phenazine pigment) which is stimulated by the inclusion of magnesium chloride and potassium sulfate in the broth. Cetrimide (N-cetyl-NNN-trimethylammonium bromide) is added to inhibit bacteria other than *Pseudomonas aeruginosa*. Its action as a quaternary ammonium cationic detergent causes nitrogen and phosphorous to be released from bacterial cells other than *Pseudomonas aeruginosa*.

EC Broth

EC (*Escherichia coli*) Broth is used to detect coliforms and *E. coli*. EC Broth contains casein peptone as a source of nutrients. Lactose provides the carbohydrate fermented by coliform bacteria and *Escherichia coli*. In addition, lactose-positive bacteria metabolize lactose with gas formation. Gram-positive bacteria are inhibited by the mixture of bile salts.

EC Broth with MUG

EC Broth with MUG is used to detect *Escherichia coli* in water, milk and food. The presence of fluorescence using a long-wave UV light source confirms the presence of *Escherichia coli* and no further confirmation is required. MUG detects anaerogenic strains, which may not be detected in the conventional procedure. Lactose is a source of energy. Casein peptone provides additional nutrients. The mixture of bile salts is inhibiting for gram-positive bacteria, particularly bacilli and fecal streptococci. The substrate 4-methylumbelliferyl-b-D-glucuronide is hydrolyzed by an enzyme, β -glucuronidase, possessed by most *Escherichia coli* and a few strains of *Salmonella*, *Shigella* and *Yersinia*, to produce a fluorescent end product, 4-methylumbelliferone.

Liquid Media

Ready-to-use media considerably reduces the preparation time in quality control laboratories and also effectively reduces the risks of cross contamination. GVS Life Sciences is cooperating closely with quality assurance managers in the industry in the development of its own media and test kits.

This intensive product development has produced a range of products that is being used to monitor production plants and conduct microbiological checks on raw materials through to final product release in laboratories.

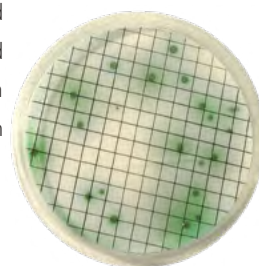
Typical Applications

Microbiological analysis of:

- Drinking water
- Surface water
- Recreational water
- Purified water
- Beverage distilled and non distilled



Brilliant Green Bile Broth



Pseudomonas Media: Typical Growth of *Pseudomonas aeruginosa* ATCC 10145



EC-Broth: Vial Left: Control; Vial Right: Broth inoculated with *Escherichia coli* ATCC 25922

Liquid Media

Liquid Media Descriptions

Enterococcus Broth

Enterococcus Broth is a modified version of the improved media described by Slanetz and Bartley with triphenyltetrazolium chloride (TTC). The membrane filtration method is simple to perform, does not require confirmation and permits a direct count of enterococci in 48 hours.

Heterotrophic Plate Count (HPC) Broth with or without TTC

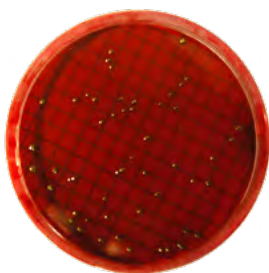
HPC Broth and HPC Broth with TTC Heterotrophic Plate Count (HPC) Broth is used to determine live heterotrophs in drinking water and other media at incubation temperatures of 35°C. All bacteria grow on HPC with indicator media and produce a red color. This is a result of the precipitation of formazan following the reduction of 2,3,5- TTC by bacteria.

KF-Streptococcus Broth

KF-Streptococcus Broth is selective for the determination of fecal streptococci in polluted surface waters. Maltose and lactose are fermentable carbohydrates, sodium azide is the selective agent and brom cresol purple is the indicator dye.

Mannitol Salt Broth

Mannitol Salt Broth is used to detect presumptive pathogenic Staphylococci. Because of the amount of peptones and beef extract, Mannitol Salt is a nutrient rich medium. Most bacteria (other than staphylococci) are inhibited by the high concentration of sodium chloride. Organisms capable of fermenting mannitol, e.g., *Staphylococcus aureus*, cause a pH change in the media. With phenol red as the pH indicator the colonies appear with a yellow coloration.



M-Endo Coliform Broth

M-Endo Coliform Broth

M-endo Broth is used to detect coliform in water samples. M-Endo is a red colored media, which needs to be stored in the dark to prevent discoloration. Gram-positive bacteria are inhibited on this media by the deoxycholate and lauryl sulfate. The addition of ethanol increases the antibacterial nature of the formulation. Lactose fermenting organisms form aldehydes, which react with Schiff's reagent (basic fuchsin and sodium sulfite) to give red colored zones around the colonies. Coliform colonies are therefore red with a characteristic metallic sheen.

M-FC Broth

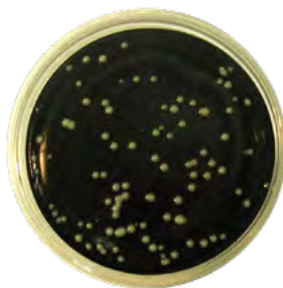
M-FC (fecal coliform) Broth allows the development of fecal coliforms at elevated temperatures (44.5°C).

M-FC with Rosolic Acid

M-FC with Rosolic Acid acts and functions in the same way as M-FC Broth. Rosolic acid inhibits bacterial growth in general, except for fecal coliforms.

M-Green Yeast and Mold Broth and M-Green Yeast and Mold Agar

M-Green Yeast and Mold Broth is used to detect yeast and mold in beverages and food. M-Green Yeast and Mold Broth is an improved modification of the liquid media. The addition of bromocresol green, which diffuses into fungal colonies as an alkaline reaction, allows them to be easily identified. Metabolic by-products from the developing colonies diffuse into the surrounding medium, further reducing the pH which aids in the inhibition of bacterial growth, but also produces an acid reaction that causes residual bromocresol green to change to yellow.



M-Green Yeast and Mold Broth:
Typical Growth of *Candida*
Albicans ATCC10231 on a Black
Membrane

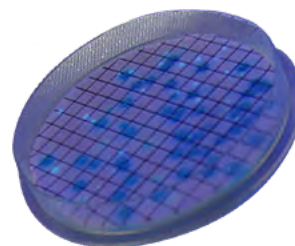
M-Green Select Broth

M-Green Select Broth was developed to improve efficiency of detection and enumeration of fungi in sugar based drinks using the membrane filtration method. This medium has a low pH, which inhibits bacterial growth. The addition of chloramphenicol further inhibits the growth of bacteria to allow for the development and enumeration of yeast and mold.

Liquid Media

MI Broth and MI Agar

MI Broth detects the presence of coliform bacteria by the production of β -galactosidase, which cleaves the substrate MUGal to produce 4-methylumbelliferone, which fluoresces on exposure to UV light. Non-coliforms do not produce this enzyme and therefore do not fluoresce on the medium. *Escherichia coli* is detected by the compound IBDG. The β -glucuronidase produced by *Escherichia coli* cleaves the substrate to produce a blue indigo color in the colonies. As *Escherichia coli* is also a total coliform, and also produces β -galactosidase, it will also fluoresce. The antibiotic cefsulodin is present to inhibit the growth of gram-positive bacteria and some non-coliform gram-negative bacteria that can cause false positive reactions.



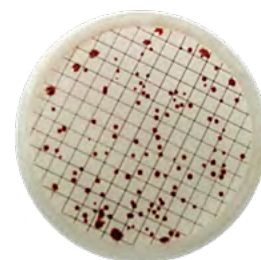
MI-Media: Pure Culture of *Escherichia coli* ATCC 25922 with UV Light

MRS Broth

MRS medium supports luxuriant growth of all lactobacilli, even the slow growing species.

M-TGE Total Count Media

All bacteria develop on TGE media and produce a range of different colored and sized colonies.



Total Count Media with Indicator. *Escherichia coli* ATCC 25922 and *Staphylococcus aureus* ATCC 25923 can be Easily Detected according to their Red to Pink Colonies

Orange Serum Media

Orange Serum Broth is used to detect aciduric microorganisms. Organisms known to grow in single strength and concentrated juices are lactic acid and acetic acid bacteria and yeast. Lactobacilli, *Leuconostoc* and yeast have all been identified as spoilage organisms by numerous authors. Orange serum at pH 5.4 to 5.6 has been reported to yield maximum counts of all types of spoilage organisms in mixed cultures and in single culture comparison tests.

PRY Broth

Preservative Resistant Yeast Broth is a low pH selective medium for the detection of spoilage microorganism in beverages and water.

Pseudomonas Broth

Pseudomonas aeruginosa is characterized by the production of pyocyanin (a blue green, water soluble, non-fluorescent, phenazine pigment) which is stimulated by the inclusion of magnesium chloride and potassium sulfate in the broth. Irgasan, an antimicrobial agent, selectively inhibits gram-positive and gram-negative bacteria other than pseudomonads. Glycerol both serves as an energy source and helps in the promotion of pyocyanin.

Total Count Media with TTC

All bacteria develop on Total Count Media with indicator and produce a red color as a result of the precipitation of formazan following the reduction of 2,3,5- TTC by bacteria.



Trypticase Soy Broth Double Strength (not Inoculated)

Trypticase Soy Broth – Single Strength

General purpose medium used in qualitative procedures for the cultivation of fastidious and non-fastidious microorganisms. Trypticase Soy Broth – Single Strength complies with the demands of the DIN Norm 10167 for the detection of *Escherichia coli* serotype 0157:H7 in foods and FDA-BAM for the isolation of enterohemorrhagic *Escherichia coli* (EHEC). In addition the media conforms to the formula of the US Pharmacopoeia.

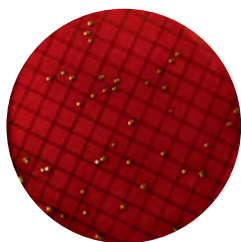
Trypticase Soy Broth – Double Strength

TSB is a medium that will support the growth of a wide variety of microorganisms including aerobic, facultative, and anaerobic bacteria and fungi.

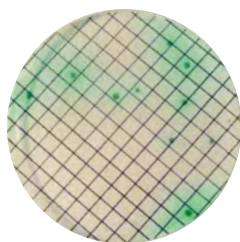
Wallerstein Nutrient Broth (WL) and WL Differential Broth (WLD)

WL Nutrient Broth is for the cultivation and enumeration of yeast and WL Differential Broth is for determination of bacterial count. Use of the medium at pH 5.5 and incubation at 25°C will give reliable counts for brewer's yeast. Adjustment of the pH to 6.5 and incubation at 30°C allows for the selective growth of baker's and distiller's yeast.

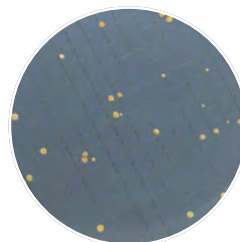
Liquid Media Selection Guide



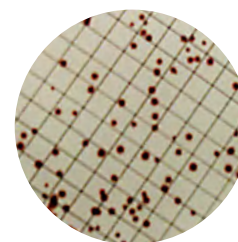
M-Endo Coliform Broth
Cat. No. 10057-654
Coliform bacteria
E. coli ATCC 25922,
E. aerogenes ATCC 13048,
P. aeruginosa ATCC 10145



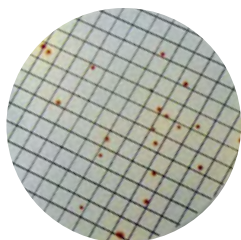
Cetrimide Broth
Cat. No. 10057-618
Pseudomonas aeruginosa
P. aeruginosa ATCC 10145



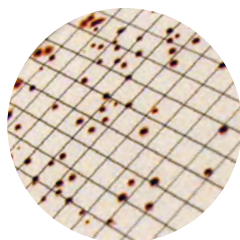
PRY Broth
Cat. No. 10057-686
PRY
Z. Bailii ATCC 58445



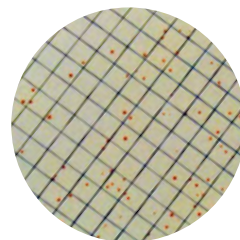
Total Count Media with TTC
Cat. No. 10057-694
All aerobic bacteria
E. coli ATCC 25922, *S. aureus* ATCC 25923,
P. aeruginosa ATCC 10145,
E. faecalis ATCC 29212



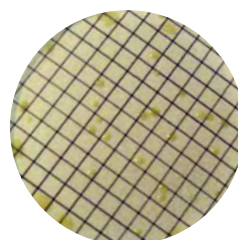
Enterococcus Broth
Cat. No. 78562-618
Enterococci
E. faecalis ATCC 19433



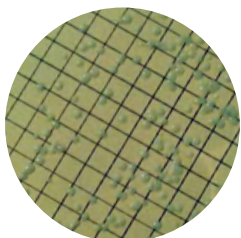
HPC Broth with TTC
Cat. No. 10057-678
Heterotrophic Plate Count
E. coli ATCC 25922, *E. faecalis*
ATCC 29212, *S. aureus* ATCC 25923



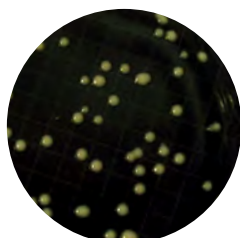
KF-Streptococcus Broth
Cat. No. 10057-650
Fecal streptococci
E. faecalis ATCC 29212,
E. faecalis ATCC 19433



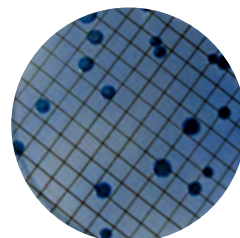
M-TGE Total Count Media
Cat. No. 10057-670
All aerobic bacteria
E. coli ATCC 25922,
S. aureus ATCC 25923



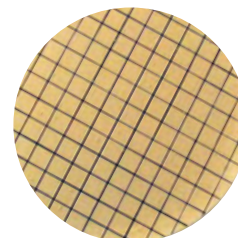
M-Green Yeast and Mold
Cat. No. 10057-662
Yeast and Mold
C. albicans ATCC 10231,
S. cerevisiae ATCC 9763



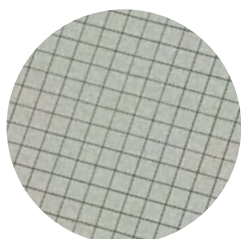
Wallerstein Nutrient Broth
Cat. No. 10057-702 *Saccharomyces cerevisiae*
E. coli ATCC 25922,
L. fermentum ATCC 9338,
S. cerevisiae ATCC 9763



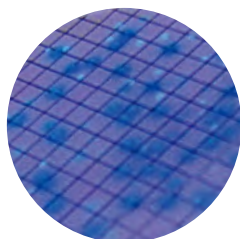
M-FC Broth/M-FC Broth
with Rosolic Acid Cat.
No. 10057-656/10057-658 Fecal coliforms
E. coli ATCC 25922,
E. aerogenes ATCC 13048



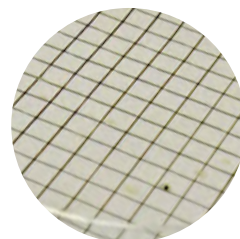
Orange Serum Media
Cat. No. 10057-684 Various
L. acidophilus ATCC 314,
S. cerevisiae ATCC 9763



Wallerstein Differential Broth
Cat. No. 10057-720
Lactobacillus plantarum
E. coli ATCC 25922,
L. fermentum ATCC 9338,
S. cerevisiae ATCC 9763



MI Broth and MI Agar
Cat. No. 10057-666
Coliform bacteria and *Escherichia coli*
E. coli ATCC 25922,
E. aerogenes ATCC 13048



MRS Broth
Cat. No. 10057-668
Lactobacilli
L. plantarum ATCC 8014



Neutralizing Buffer Swabs
Cat. No. 10057-680/10057-682



Liquid Media Selection Guide



Trypticase Soy Broth
Single Strength
Cat. No. 10057-698
B. subtilis ATCC 6633,
C. albicans ATCC 10231,
E. coli ATCC 25922,
S. aureus ATCC 25923



Trypticase Soy Broth
Double Strength
Cat. No. 10057-700
B. subtilis ATCC 6633,
C. albicans ATCC 10231,
E. coli ATCC 25922,
S. aureus ATCC 25923



EC Broth
Cat. No. 10057-628
Coliform bacteria
E. coli ATCC 25922,
E. aerogenes ATCC 13048



EC Broth with MUG
Cat. No. 10057-630
Escherichia coli
E. coli ATCC 25922



Listeria SwabCheck
Cat. No. 10057-652



Hygiene SwabCheck
Cat. No. 10057-648



Buffer Swabs
Cat. No. 10057-616



Legend



Water



Beverages



Food



Wastewater



Dairy



Pharmaceutical



Cosmetics

Liquid Media

2 mL Ampoules Ordering information

Product Code	Description	Packaging
10057-618	Cetrimide Broth	50/pk
78562-618	Enterococcus Broth	50/pk
10057-676	Heterotrophic Plate Count (HPC) Broth with TTC	50/pk
10057-678	HPC Broth	50/pk
10057-650	KF-Streptococcus Broth	50/pk
10057-654	M-Endo Coliform Broth	50/pk
10057-656	M-FC media	50/pk
10057-658	M-FC Broth with rosolic acid	50/pk
10057-660	M-Green Select Broth	50/pk
10057-662	M-Green Yeast and Mold Broth	50/pk
10057-666	MI-Broth Media	50/pk
10057-668	MRS Broth	50/pk
10057-670	M-TGE Broth	50/pk
10057-684	Orange Serum Broth	50/pk
10057-686	PRY Broth	50/pk
10057-688	Pseudomonas Broth	50/pk
10057-694	Total Count Broth with TTC	50/pk
10057-702	Wallerstein Broth	50/pk
10057-720	Wallerstein Differential Broth	50/pk
10057-628	EC Bottled Broth, with Durham tubes	20/pk

9 mL Vials Ordering information

Product Code	Description	Packaging
10057-630	EC with MUG, Bottled Broth	20/pk
10057-664	MI Media, Bottled Broth, 50 mL,	1/pk
10057-698	Trypticase Soy Broth (TSB) Single strength, Bottled Broth, 100 mL	1/pk

Bottled Media Ordering information

Product Code	Description	Packaging
10057-700	Trypticase Soy Broth (TSB) Double strength, Bottled Broth, 100 mL	1/pk

SwabCheck™

swabcheckK



SwabCheck: how to use

Open the sterile pack, remove the swab and wipe it over an area of about 10 x 10 cm. Then twist off the cap of the medium tube and insert the swab so that the cap fits tightly. Label the sample tube and incubate at the appropriate temperature.

A change in color indicates the presence of the microorganism in question. The quicker the color change occurs, the higher the bioburden. If no color change has been observed after the maximum incubation period has elapsed, then the corresponding microorganism is not present. GVS Life Sciences offers SwabCheck in packs of 25 pieces. With a shelf-life of 12 months.

The SwabCheck principle

The surface is wiped with a cellulose swab and any bacteria collected are transferred via the swab into a tube containing a special medium with an indicator dye, which is then incubated. A single bacterium is sufficient to cause a color change. This means that SwabCheck is about 1000 times more sensitive than the conventional ATP method. This accuracy is particularly important in the food industry. With this simple method, it is possible to identify microorganisms such as *Listeria monocytogenes*, which must not be present in any concentration in food and beverages.

Features & Benefits:

- The right test for each type of contamination
- Qualitative and semi-quantitative hygiene control
- Sterile packed and ready-for-use
- Easy to handle
- Rapid results
- Long shelf-life

Neutralizing Buffer Swabs

Neutralizing buffer swabs are used in the monitoring of surfaces for total bacterial count. Neutralizing buffer inactivates the bactericidal and bacteriostatic effects of chlorine and quaternary ammonium detergents. Without exhibiting toxic effects on microorganisms. This permits the transfer of swabbed organisms to the laboratory without loss in viability. Neutralizing buffer is not designed to culture and enumerate microorganisms.

Buffer Swabs

Buffer Swabs are used for the collection of surface contamination from flat or convoluted surfaces prior to transport to a laboratory for culture and enumeration. Buffer swabs contain no bacteriostatic or bactericidal compounds and cannot suppress the action of detergents.

SwabCheck

SwabCheck is used as an indication of hygiene on contact surfaces. SwabCheck changes color from purple to yellow. The color change is based on acid reaction with the indicator. The more rapid the color change, the higher the level of bacteria in the sample. SwabCheck is useful in determining the sanitation levels of preparation surfaces, filling ports, and processing areas in beverage and food processing plants, dairies, restaurants, and healthcare facilities.

Coliform SwabCheck

Escherichia coli and coliforms are used traditionally as indicator organisms for fecal contamination in water and other environmental samples. Detection of these organisms usually points to poor hygiene at some stage in the production process or pollution of water at source. The presence of coliforms is indicated by a color change from brown to yellow. The more rapid the color change the higher the level of coliform bacteria.

Hygiene SwabCheck

Easy to use: The Hygiene SwabCheck shows an obvious color change from red to yellow. The time taken for this change is an indication of the level of contamination. This should be used in conjunction with known specification levels of your process/product. Rapid screening hygiene test is a same day test that will detect gross bacterial and fungal contamination of work surfaces, equipment machinery or other sampling sites.

Total Count Swab Kit



Coliform SwabCheck



Swabs

Listeria SwabCheck

Listeria Isolation SwabCheck is designed to be used alongside traditional selective methods to improve the quality system and minimize the risk of Listeria contamination. This simple to use diagnostic test can be applied anywhere in the environment and on foodstuffs where the presence of Listeria species would be critical.

Listeria sp and specifically Listeria monocytogenes are rapidly becoming the most important pathogen in the food industry; regulatory bodies from around the world are insisting that all food products are Listeria free. Listeria Isolation SwabCheck works on an enhanced Esculin media formulation. The hydrolysis of esculin gives a distinctive black/brown precipitate. Inhibitors and antibiotics are present in the media, which will inhibit the growth of non-Listeria species.

SwabCheck Escherichia coli

SwabCheck Escherichia coli is used for the detection of Escherichia coli on surfaces. The presence of fluorescence using a longwave UV light source confirms the presence of Escherichia coli and any further confirmation is not required. MUG detects anaerogenic strain that may not be detected in the conventional procedure. Lactose is a source of energy. Casein peptone provides additional nutrients. The mixture of bile salts is inhibiting for gram-positive bacteria, particularly bacilli and fecal streptococci. The substrate 4-methylumbelliferyl-b-D-glucuronide is hydrolyzed by an enzyme, b-glucuronidase, possessed by most Escherichia coli and a few strains of Salmonella, Shigella, and Yersinia, to produce a fluorescent end product, 4-methylumbelliferone. The presence of Escherichia coli is detected by the appearance of fluorescence throughout the tube.

Total Count Swab Kit

Total Count Swab Kit is used for the non-selective development and enumeration of all aerobic bacteria on surfaces in accordance with Hazard Analysis and Critical Control Points (HACCP). The kit includes the swabs and culture medium, packaged with a membrane device, providing a quantitative result. All bacteria develop on TGE media and produce a range of different colored and sized colonies. It is not possible using TGE to presumptively identify any bacteria. Identification can only be undertaken using traditional microbiology techniques following initial colony development.

Yeast and Mold Swab Kit

Yeast and Mold Swab Kit is used for the enumeration of yeast and molds on surfaces in accordance with HACCP. The kit includes the swabs and culture medium, packaged with a membrane device, providing a quantitative result. M-Green yeast and mold is an improved modification of the liquid medium, and was developed to improve efficiency of detection and enumeration of fungi in sugar based drinks using the membrane filtration method. This medium has a low pH, which inhibits bacterial growth. The addition of bromocresol green, which diffuses into fungal colonies as an alkaline reaction, allows them to be easily identified. Metabolic by-products from the developing colonies diffuse into the surrounding medium, further reducing the pH that aids in the inhibition of bacterial growth, but also produces an acid reaction that causes residual bromocresol green to change to yellow. Green opaque colonies against a yellow background are indicative of the growth of yeasts. Mold colonies are green and filamentous.

Polywipe Sponge

Polywipe Sponge is used for the recovery of microorganisms from a surface. Polywipe is a blue sponge that is premoistened with neutralizing buffer to neutralize the effects of surface disinfectants. The sponge material is selected to be free of the preservatives found in commercially available sponges, which can inhibit microorganism growth. Polywipe sponges are biocide free and tested for zero toxicity to microorganisms. Each sponge is individually wrapped in a peel pouch and gamma irradiated to ensure sterility.

Hygiene SwabCheck



Listeria SwabCheck



Yeast and Mold Swab Kit



Polywipe Sponge



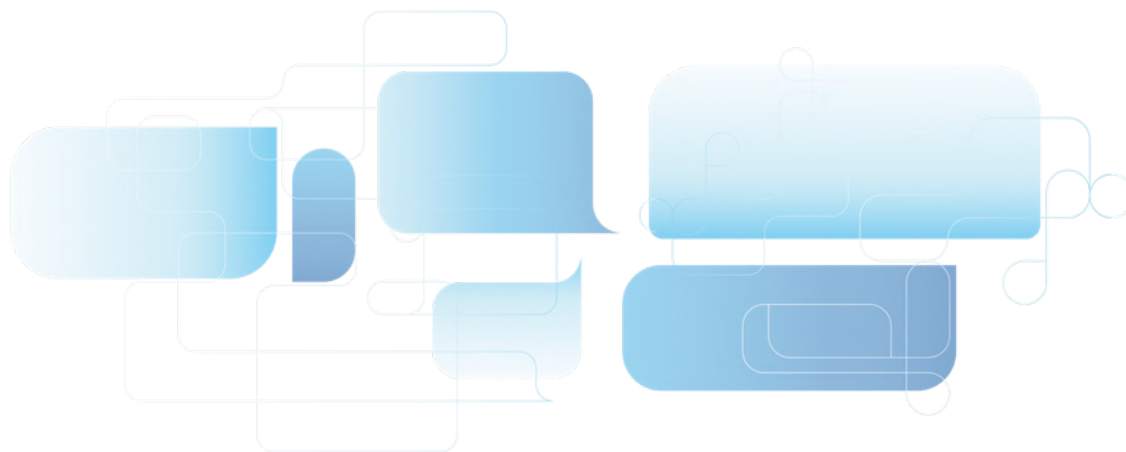
Swabs

Buffers Ordering information

Product Code	Description	Volume	Quantity
10057-680	Neutralizing Buffer Swabs	4 mL	125/pk
10057-682	Neutralizing Buffer Swabs	4 mL	500/pk
10057-616	Buffer Swabs	4 mL	500/pk

SwabCheck Ordering information

Product Code	Description	Volume	Quantity
10057-696	Total Count Swab Kit	2.8 mL/tube and membrane device	30/pk
10057-722	Yeast and Mold Swab Kit	2.8 mL/tube and membrane device	30/pk
10057-648	Hygiene SwabCheck	Individually wrapped package	25/pk
10057-652	Listeria SwabCheck	Individually wrapped package	25/pk



Buffers

Dilution Bottles



Prefilled sterile dilution bottles are designed for sample dilution of water, dairy products, foods, and pharmaceuticals prior to microbiological testing. Final pH for all solutions is 7.2 pH $\pm$ 0.2 pH at 25°C. They come in an easy open, flip-top, plastic container with a tamper-evident seal.

Butterfield's Phosphate Buffer contains monobasic potassium phosphate and is used extensively in the food, dairy, and pharmaceutical industries. Offered in 90 ml and 99 ml volumes for easy 1:10 and 1:100 dilutions. It is recommended as a general diluent in laboratory procedures by the Federal Drug Administrations and in the Bacteriological Analytical Manual. This product is prepared according to Standard Methods for the Examination fo Water and Wastewater for use in water testing.

Phosphate Buffer with magnesium chloride is used as the diluents for the preparation of dilutions in plate counts in the dairy and food industries. It is recommended by APHA for the recovery of injured microorganisms from dairy and food samples. Contains deionized water, monopotassium phosphate, and magnesium chloride.

Ordering information

Product Code	Description	Volume	Quantity
10057-624	Dilution Bottle, Butterfield's Buffer	99 mL	72/pk
10057-622	Dilution Bottle, Butterfield's Buffer	90 mL	72/pk
10057-626	Dilution Bottle, Phosphate Buffer Magnesium Chloride	99 mL	72/pk



Analytical Funnels

GVS microbiological monitors and analytical funnels provide a complete system solution for liquid sample preparation. Each single-use, pre-sterilized filtering unit consists of a measured filter funnel, base, pad, membrane, removable lid and plug. This all-in-one system easily converts from the 100 mL filtration unit to a petri dish, which can be labeled and incubated for culturing. The GVS funnels meet the standard method requirements for a disposable device.

Each sterile analytical funnel includes a removable NC membrane.

Analytical funnels are ready-to-use 100 ml filtration units with membrane and culturing devices.

After filtration the membrane of the analytical funnel can be used for a wide range of qualitative and quantitative biological analysis.



Step 1



Step 2



Step 3



Step 4

Workflow

1. Sample filtration
2. Remove the upper part from the base
3. Put the base on the membrane lifting device
4. Separate the membrane from the pad and transfer the membrane into a petri dish with a sterile pad

Advantages

◆ Saves up to 50% in time

- No flaming
- Ready-to-use
- Presterilized

◆ Safety at work

- No flaming
- Minimizes the risk of cross-contamination

◆ Easy Handling

- Ready-to-use filtration unit
- Easy release of membrane

Ordering information

Product Code	Description	Qty.
10057-706	Funnel, Nitrocellulose, White/Black Grid Sterile 0.2 µm	50/pk
10057-704	Funnel, Nitrocellulose, White/Black Grid Sterile 0.2 µm , individually packaged	50/pk
10057-708	Funnel, Nitrocellulose, White/Black Grid Sterile 0.45 µm	50/pk
10057-710	Funnel, Nitrocellulose, White/Black Grid Sterile 0.45 µm, individually packaged	50/pk
10057-774	Funnel, Nitrocellulose, Black/White Grid Sterile 0.45 µm	50/pk
10057-776	Funnel, Nitrocellulose, Black/White Grid Sterile 0.45 µm, individually packaged	50/pk

Microbiological Monitors

GVS microbiological monitors and analytical funnels provide a complete system solution for liquid sample preparation. Each single-use, pre-sterilized filtering unit consists of a measured filter funnel, base, pad, membrane, removable lid and plug. This all-in-one system easily converts from the 100 mL filtration unit to a petri dish, which can be labeled and incubated for culturing. The GVS funnels meet the standard method requirements for a disposable device.

Each sterile monitor includes a NC membrane fixed and welded to the dish.

Monitors are single use, pre-sterilized filtering units with welded fixed membranes and culturing devices.

Microbiological Monitors are ideal for monitoring contaminants in liquid samples from raw materials to finished products. After the filtration is complete, 2 ml of microbiological media is added and the unit is converted into a petri dish for culturing the contaminants collected.



Step 1



Step 2



Step 3



Step 4

Workflow

1. Sample filtration
2. Remove the funnel
3. Add 2 ml of microbiological media
4. Replace the lid and incubate

Advantages

- ◆ **Saves up to 70% in time**
 - No flaming
 - Ready-to-use
 - Presterilized
- ◆ **Safety at work**
 - No flaming
 - Minimizes the risk of cross-contamination
- ◆ **Easy Handling**
 - Ready-to-use filtration unit

Ordering information

Product Code		Description	Qty.
47 mm	56 mm		
10057-712	10057-714	Monitor, Nitrocellulose, 0.2 µm, white/black grid, sterile	50/pk
10057-716	10057-718	Monitor, Nitrocellulose, 0.45 µm, white/black grid, sterile	50/pk
10057-778	10057-610	Monitor, Nitrocellulose 0.45 µm, black/white grid, sterile	50/pk
10057-612	10057-614	Monitor, Nitrocellulose, 0.8 µm, black/white grid, sterile	50/pk

Filter Holders

47 mm Filter Holder - Gravi-Seal™



The GVS polysulfone 47 mm autoclavable filter holder combines The Gravi-Seal filter holder uses a unique gravity held design that allows for one-handed operation with no danger of filter by-pass or sample leakage even when using depth filters.

The filter holder combines the key features and benefits needed in one simple unit, making it a tremendous value. The funnel includes only two components with no required clamps or locking devices to manipulate.

The durable and break-resistant polysulfone (PS) unit is autoclavable and chemically resistant for use in cell culturing and microbiological applications and filtering. The unit includes graduated up to 350 mL with 50 mL intervals.

Each unit is supplied with a #8 rubber stopper to allow use with standard 1L filter flasks or vacuum systems such as the GVS 3- or 6- place Manifold.

Features & Benefits

- Durable - break resistant, no extra parts to break or wear out
- Uses a 47 mm depth filter disc
- One-handed operation
- Only two parts
- No clamps, wheel locks, or magnets to wear out
- Solid, stable and easy to use

Typical Applications

- Filtering liquids for sterility
- Particle removal
- General filtration
- Autoclavable

Ordering information

Product Code	Description	Quantity
78172-692	Gravi-Seal PS Analytical Filter Holder (complete unit): 47 mm	1/pk
78562-060	Gravi-Seal PS Analytical Filter Holder (complete unit): 47 mm	3/pk
78562-244	Gravi-Seal PS Analytical Filter Holder, Base Only	1/pk
78562-540	Gravi-Seal PS Analytical Filter Holder, Funnel Only	1/pk

Microfiltration

50 mm Vent Filter

Characteristics

Membrane: hydrophobic PTFE reinforced with polypropylene

Porosities: 0.45 µm or 0.20 µm

Housing: Polypropylene Ultrasonically welded

Connectors: 6 mm (1/4 in) to 12 mm (1/2 in) stepped barb

Filter Area: 19.6 cm²

Air Flow Rate: 32 L/min at 1 bar (0.45 µm), 27 L/min at 1 bar (0.20 µm)

Housing Diameter: 63 mm

Housing Length: 53 mm

Maximum Pressure: 3.5 bar (approx. 50 psi)

Sterilization: Autoclave at 121°C or ETO



Typical Applications

- Sterile venting of filling vessels and carboys
- Autoclave venting
- Low volume sterile filtration of non-aqueous fluids
- In-line sterilization of and particulate removal from air and gases

Vent Filter - Non Sterile Ordering information

Membrane Material	Pore Size(µm)	End Fitting	Housing	Color	Product Code Packaging 100/pk
PTFE	0.20	Barb Connectors	Polypropylene	Transparent	78173-388
PTFE	0.45	Barb Connectors	Polypropylene	Transparent	78172-530

Vent Filter - Sterile Ordering information

Membrane Material	Pore Size(µm)	End Fitting	Housing	Color	Product Code Packaging 10/pk
PTFE	0.20	Barb Connectors	Polypropylene	Transparent	78562-000
PTFE	0.45	Barb Connectors	Polypropylene	Transparent	78562-592

Microbial Count Plate

Readily-Usable MicroPad Microbiology Enumeration Medium

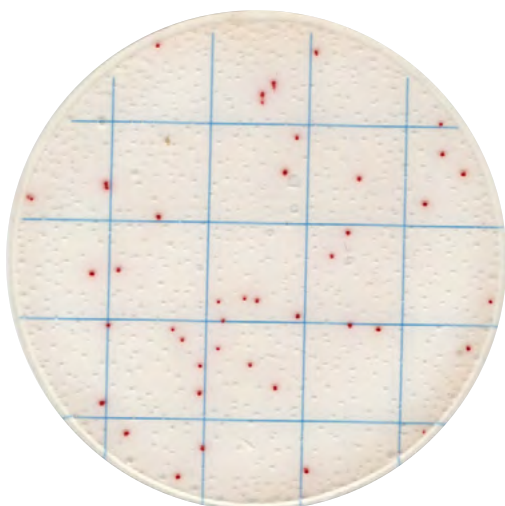


Less time & less labor work

No more culture medium preparation

No extra reagent required

1-24-C Easy Determination



1ml Sample Suspension

1ml of solid sample suspension or 1ml liquid sample in PBS, adjust the pH to neutral.

24h Incubation

Incubate at 36 °C for 22 - 24h.

Check the result

Enumerate the colonies according to the kit instruction manual. Further identification can be performed if necessary.

Ordering information

Product Code	Description	Result	Incubation
78172-942	Aerobic Count Plate	Red colony	36±1°C, 48±2h
78173-198	Staph Count Plate	Dark purple red colony	36±1°C, 24±2h
78172-934	Pivot E. coli / Coliform Count Plate	Blue purple colony	36±1°C, 24±2h
78172-270	Pivot Coliform Count Plate	Green colony	36±1°C, 24±2h
78172-624	Listeria Count Plate	Blue green colony	36±1°C, 24±2h
78173-226	Yeast & Mould Count Plate	Green colony	28±1°C, 48-2h
78173-394	Coliform Count Plate	Red colony	36±1°C, 18-24h
78173-412	E.coli / Coliform Count Plate	Blue purple & red colony	36±1°C, 18-24h

Microbial Count Plate

Readily-Usable MicroPad Microbiology Enumeration Medium



Less time & less labor work

No more culture medium preparation

No extra reagent required

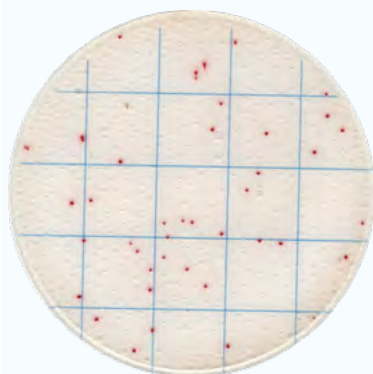
Ordering information

Product Code	Description	Result	Incubation
78173-424	Bacillus Cereus Count Plate	Purple red colony	36±1°C, 48±2h
78172-262	Lactic Acid Bacteria Count Plate	Red colony	36±1°C, 48±2h
78172-414	Salmonella Count Plate	Purple red colony	36±1°C, 24±2h
78173-170	Enterobacteriaceae Count Plate	Red colony	36±1°C, 18-24h
78172-722	Geobacillus s. Count Plate	Red colony	55±1°C, 36±1h
78173-060	Enterococcus f. Count Plate	Black, black green colony	36±1°C, 26±2h
78172-814	Bacillus Psychrophilus Count Plate	Red colony	21±1°C, 48-60h
78172-698	Aerobic Bacillus Count Plate	Red colony	36 ±1°C, 24±2h
78172-954	Shigella Count Plate	Red colony	36 ±1°C, 24-48h
78173-460	Listeria m. Count Plate	Blue green colony	36±1°C, 36h
78172-714	E.Coli 0157 Count Plate	Gray colony with halo	36±1°C, 18-24h
78173-204	Vibrio parahaemolyticus Count Plate	Red colony	36±1°C, 8-18h
78172-248	Psychrophilic Bacteria Count Plate	Red colony	21±1°C, 28-30h



Microbial Count Plate

MicroPad Aerobic Count Plate



Product Code: 78172-942

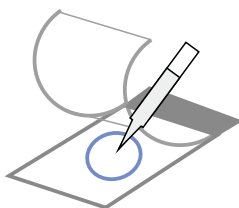
25 plates / pack

Aerobic Count Plate (ACP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of aerobic colonies after 48h – 72h incubation.

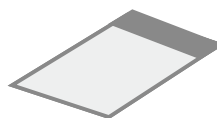
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



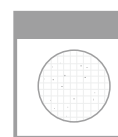
Sample Preparation



Sampling



Incubation



Enumeration

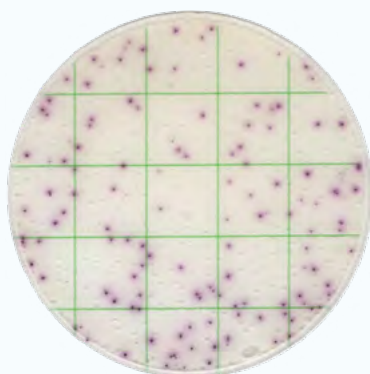
Aerobic Count Plate is applicable for the counting of as many as 65 aerobic bacteria. All will produce red colonies for counting, regardless of the size and clarity.

The following bacteria has been tested successfully with this count plate

ATCC 8099, CICC 10305, ATCC 25922, CICC 10003, CICC 10389, CICC 10907, CICC 21530, CICC 10667, CICC 24190, CICC 24186, CICC 24188, CICC 24187, ATCC 25955, ATCC 10031, ATCC 13883, ATCC 13048, ATCC 29544, ATCC 25931, ATCC 12022, CICC 10865, CICC 23829, CICC 21534, CICC 21535, ATCC 9207, ATCC 15947, ATCC 51114, ATCC 43864, ATCC 25405, GDMCC 1.163, ATCC 13311, CICC 21501, CICC 21495, CICC 21512, CICC 21501, ATCC 27511, ATCC 33291, ATCC 43478, CICC 10869, ATCC 19433, ATCC 19258, CICC 20247, ATCC 8014, CICC 6009, ATCC 6538, ATCC 25923, CICC 10384, ATCC 27217, ATCC 12228, CMCC 26069, CICC 21602, ATCC 8032, ATCC 33090, ATCC 19111, ATCC 35967, ATCC 19119, ATCC 35897, ATCC 25401, CICC 20483, CICC 21261, ATCC 11778, ATCC 6633, CICC 10071, etc.

Microbial Count Plate

MicroPad Staphylococcus aureus Count Plate



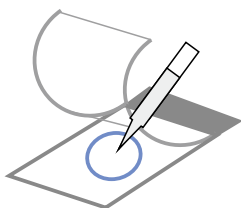
Product Code: 78173-198 25 plates / pack

Staphylococcus aureus Count Plate is a sample-ready-culture medium system which contains readymade Baird-Parker medium, a cold-water-soluble gelling agent indicator and selective inhibitor. It can be used in direct counting of staphylococcus aureus colonies after 24h incubation.

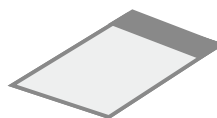
**Read the user manual carefully before test, and follow the instructions.
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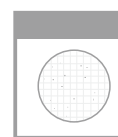
Sample Preparation



Sampling



Incubation



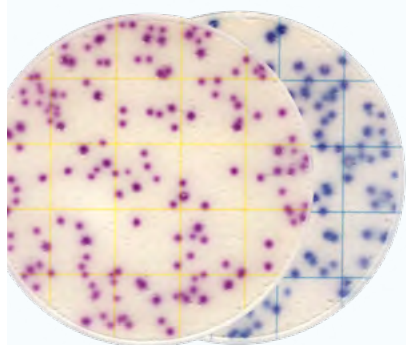
Enumeration

Incubate the plates at 36 ± 1 °C for 24 ± 2 hours.

For aquatic products, please incubate at 30 ± 1 °C for 72 ± 3 hours for. Up to 6 plates can be stacked in one incubation holder. On this Staphylococcus aureus count plate, Staphylococcus aureus is red colonies, other staphylococcus is light pink green or colorless colonies. Majority of gram-negative and other gram-positive bacterium cannot grow in this plate, or they can present as blue colonies.

Microbial Count Plate

MicroPad Pivot E. coli/Coliform Count Plate



Product Code: 78172-934

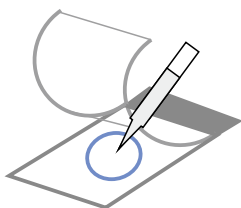
25 plates / pack

Pivot E. coli/Coliform Count Plate (ECCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of E. coli and Coliform colonies after 24h incubation.

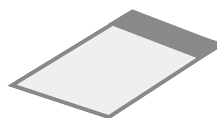
**Read the user manual carefully before test, and follow the instructions.
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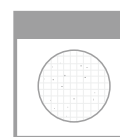
Sample Preparation



Sampling



Incubation



Enumeration

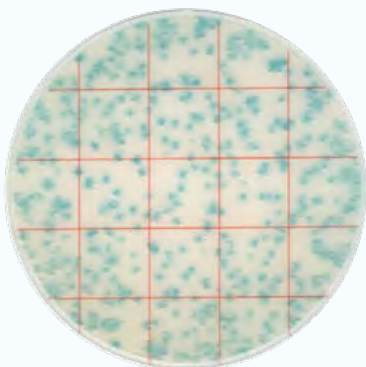
Incubate the plates at 36 ± 1 °C for 24 ± 2 hours. Up to 6 plates can be stacked in one incubation holder.

Counting of Coliform: Count colonies within 15-150 CFU. All red or blue colonies shall be counted regardless of the size or intensity.

Counting of E. coli: Count colonies within 10-100 CFU. All blue colonies shall be counted regardless of the size or intensity.

Microbial Count Plate

MicroPad Pivot Coliform Count Plate



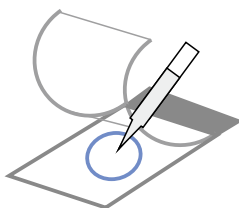
Product Code: 78172-270 25 plates / pack

Pivot Coliform Count Plate (CCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of coliform colonies after 24h incubation.

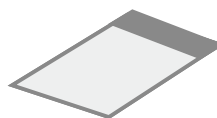
**Read the user manual carefully before test, and follow the instructions.
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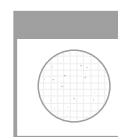
Sample Preparation



Sampling



Incubation



Enumeration

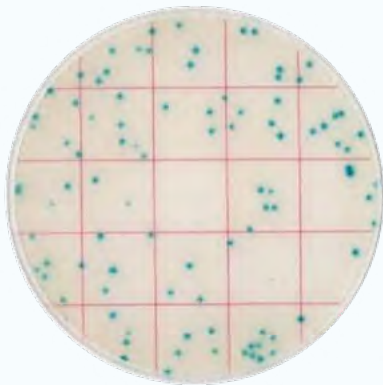
This Pivot Coliform Count Plate (CCP) can be used in the quantitative plating of Coliform Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All green colonies shall be counted regardless of the size or intensity.

Count colonies within 15-150 CFU, count all the green colonies.

Microbial Count Plate

MicroPad Listeria Count Plate

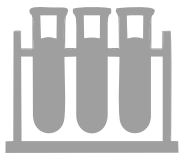


Product Code: 78172-624

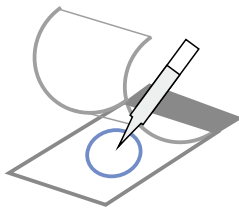
25 plates / pack

Aerobic Count Plate (ACP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of aerobic colonies after 48h – 72h incubation.

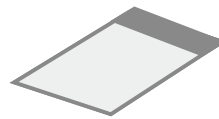
**Read the user manual carefully before test, and follow the instructions.
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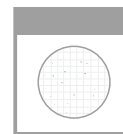
Sample Preparation



Sampling



Incubation



Enumeration

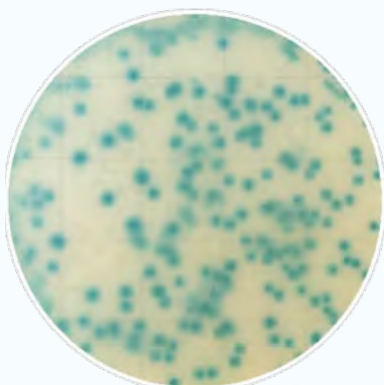
This Listeria Count Plate can be used in the quantitative plating of Listeria Colonies in the food, food material, water and production environment.

Quantitative counting of the plate can be done by a standard colony counter or by software. All green colonies shall be counted regardless of the size or intensity.

Count colonies within 30-200 CFU, count all the green colonies.

Microbial Count Plate

MicroPad Yeast & Mould Count Plate



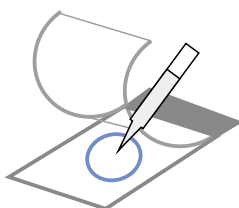
Product Code: 78173-226 25 plates / pack

Yeast Mould Count Plate (YM) is a sample-ready-culture medium system which contains ready-made dry medium, somatomedin, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of yeast and mould colonies after 2-3 days' incubation.

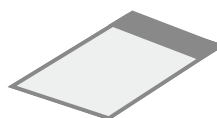
**Read the user manual carefully before test, and follow the instructions.
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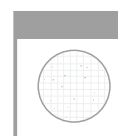
Sample Preparation



Sampling



Incubation



Enumeration

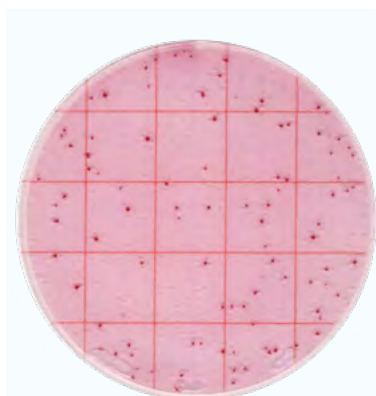
This Yeast Mould Count Plate can be used in the quantitative plating of yeast and mould colonies in the heat-processed product.

Quantitative counting of the plate can be done by a standard colony counter or by software. All green colonies shall be counted regardless of the size or intensity.

Count colonies within 10-150 CFU, count all the green colonies.

Microbial Count Plate

MicroPad Coliform Count Plate



Product Code: 78173-394

25 plates / pack

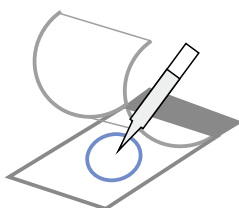
which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of coliform colonies after 18h – 24h incubation.

Read the user manual carefully before test, and follow the instructions.

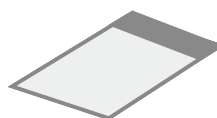
Failure to do so may lead to inaccurate results.



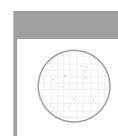
Sample Preparation



Sampling



Incubation



Enumeration

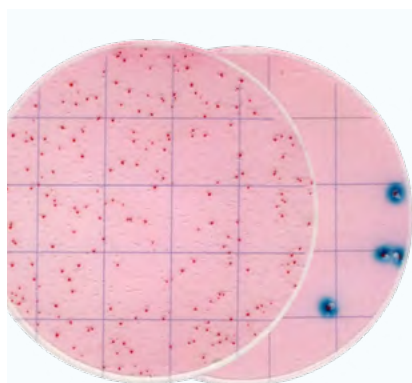
This Coliform Count Plate can be used in the quantitative plating of Coliform Colonies in the food and beverage industries. Incubate the plates at 36 ± 1 °C for 18-24 hours. Up to 6 plates can be stacked in one incubation holder.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 15-150 CFU, count all the red colonies.

Microbial Count Plate

MicroPad E. coli/Coliform Count Plate



Product Code: 78173-412

25 plates / pack

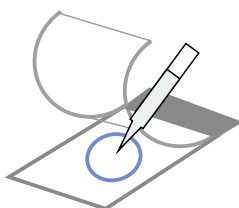
E. coli/Coliform Count Plate is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of E. coli/Coliform colonies after 18-24h incubation.

Read the user manual carefully before test, and follow the instructions.

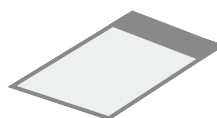
Failure to do so may lead to inaccurate results.



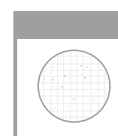
Sample Preparation



Sampling



Incubation



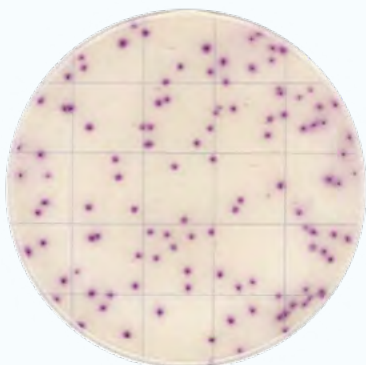
Enumeration

This E. coli/Coliform Count Plate can be used in the quantitative plating of E. coli/Coliform Colonies in the food and beverage industries.

Coliform can grow in this plate, Escherichia Coli are blue colonies associated with gas bubble, Klebsiella pneumonia and enterobacter cloacae are red colonies associated with gas bubble, Citrobacter are red colonies without gas bubble. Other gram-negative bacterium (Salmonella, Shigella) can grow in this plate, their colonies are red without gas bubble. Enterobacter Sakazakii can grow in this plate, its colonies are red associated with gas bubble.

Microbial Count Plate

MicroPad Bacillus cereus Count Plate



Product Code: 78173-424

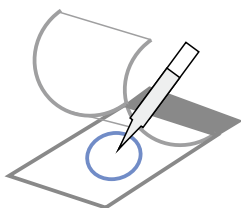
25 plates / pack

Bacillus cereus Count Plate (BCCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Bacillus cereus colonies after 24h incubation.

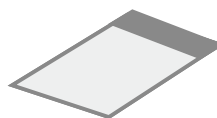
**Read the user manual carefully before test, and follow the instructions.
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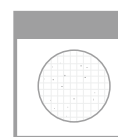
Sample Preparation



Sampling



Incubation



Enumeration

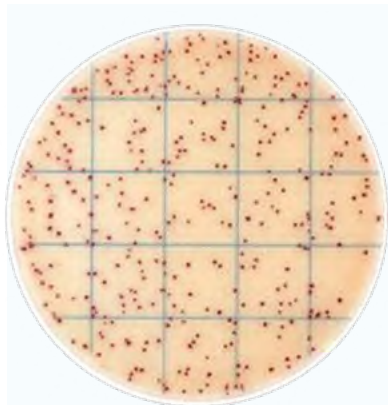
This Bacillus cereus Count Plate (BCCP) can be used in the quantitative plating of Bacillus cereus Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All purple red colonies shall be counted regardless of the size or intensity.

Count colonies within 20-200 CFU, count all the purple red colonies.

Microbial Count Plate

MicroPad Lactic Acid Bacteria Count Plate



Product Code: 78172-262

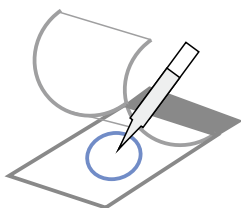
25 plates / pack

Lactic Acid Bacteria Count Plate (LABP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of lactic acid bacteria colonies after 24-48h incubation.

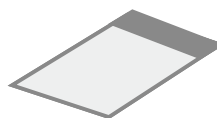
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



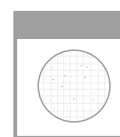
Sample Preparation



Sampling



Incubation



Enumeration

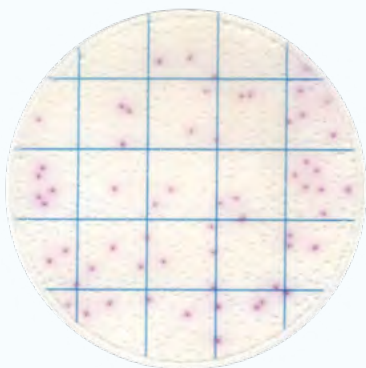
This Lactic Acid Bacteria Count Plate (LABP) can be used in the quantitative plating of Lactic Acid Bacteria Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 30-300 CFU, count all the red colonies.

Microbial Count Plate

MicroPad Salmonella Count Plate



Product Code: 78172-414

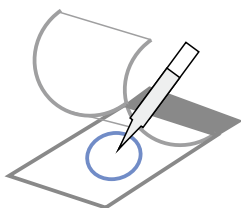
25 plates / pack

Salmonella Count Plate (SCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Salmonella colonies after 24h incubation.

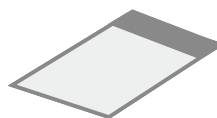
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



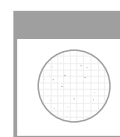
Sample Preparation



Sampling



Incubation

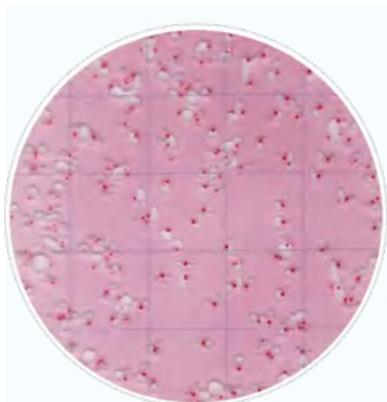


Enumeration

This Salmonella Count Plate (SCP) can be used in the quantitative plating of Salmonella Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details. Quantitative counting of the plate can be done by a standard colony counter or by software. All purple red colonies shall be counted regardless of the size or intensity. Count colonies within 30-200 CFU, count all the purple red colonies.

Microbial Count Plate

MicroPad Enterobacteriaceae Count Plate



Product Code: 78173-170

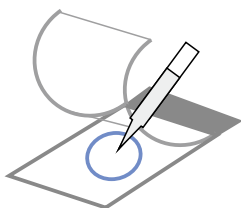
25 plates / pack

Enterobacteriaceae Count Plate (EBCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Enterobacteriaceae colonies after 24h incubation.

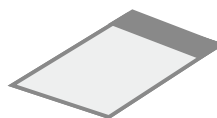
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



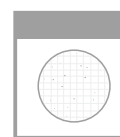
Sample Preparation



Sampling



Incubation



Enumeration

This Enterobacteriaceae Count Plate (EBCP) can be used in the quantitative plating of Enterobacteriaceae Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 15-150 CFU, count all the red colonies.

Microbial Count Plate

MicroPad Geobacillus stearothermophilus Count Plate



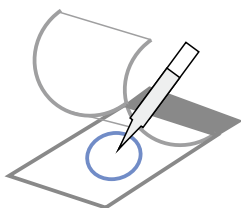
Product Code: 78172-722 25 plates / pack

Geobacillus stearothermophilus Count Plate (GSCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Geobacillus stearothermophilus colonies after 36h incubation.

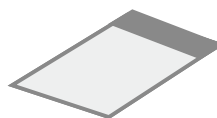
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



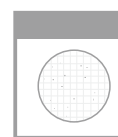
Sample Preparation



Sampling



Incubation



Enumeration

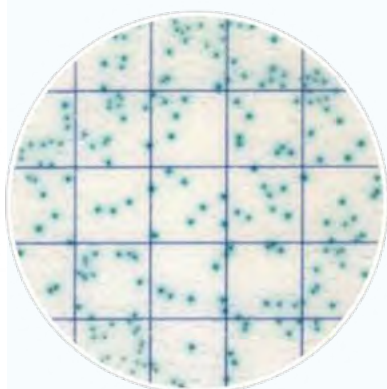
This Geobacillus stearothermophilus Count Plate (GSCP) can be used in the quantitative plating of Geobacillus stearothermophilus Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 10-150 CFU, count all the red colonies.

Microbial Count Plate

MicroPad Enterococcus faecalis Count Plate



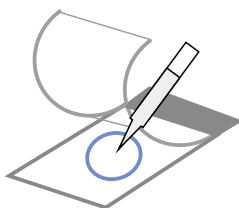
Product Code: 78173-060 25 plates / pack

Enterococcus faecalis Count Plate (EFCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Enterococcus faecalis colonies after 24h incubation.

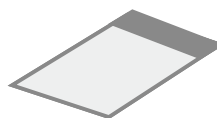
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



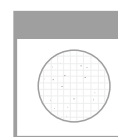
Sample Preparation



Sampling



Incubation



Enumeration

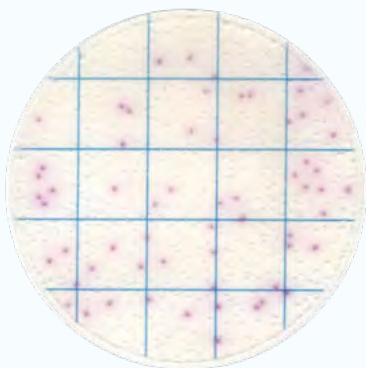
This Enterococcus faecalis Count Plate (SCP) can be used in the quantitative plating of Enterococcus faecalis Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All purple red colonies shall be counted regardless of the size or intensity.

Count colonies within 20-100 CFU, count all the dark colonies with blue halo.

Microbial Count Plate

MicroPad Bacillus Psychrophilus Count Plate



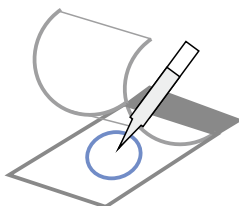
Product Code: 78172-814 25 plates / pack

Bacillus Psychrophilus Count Plate (BPCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of bacillus psychrophilus colonies after 48-60h incubation.

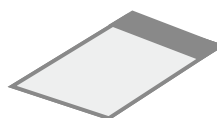
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



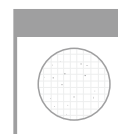
Sample Preparation



Sampling



Incubation



Enumeration

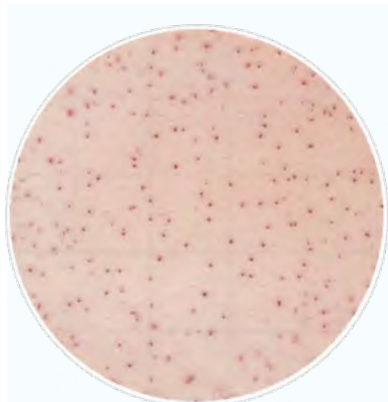
This Bacillus Psychrophilus Count Plate (BPCP) can be used in the quantitative plating of Bacillus Psychrophilus Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 10-150 CFU, count all the red colonies.

Microbial Count Plate

MicroPad Aerobic Bacillus Count Plate



Product Code: 78172-698

25 plates / pack

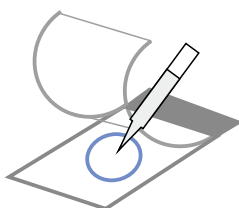
Aerobic Bacillus Count Plate (ABCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of aerobic bacillus colonies after 24h incubation.

Read the user manual carefully before test, and follow the instructions.

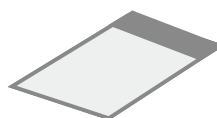
Failure to do so may lead to inaccurate results.



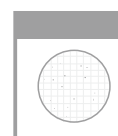
Sample Preparation



Sampling



Incubation



Enumeration

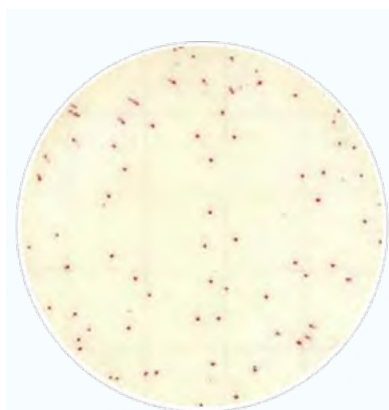
This Aerobic Bacillus Count Plate (ABCP) can be used in the quantitative plating of Aerobic Bacillus Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 10-150 CFU, count all the purple red colonies.

Microbial Count Plate

MicroPad Shigella Count Plate



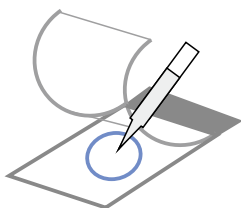
Product Code: 78172-954 25 plates / pack

Shigella Count Plate (SHCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Shigella colonies after 24-48h incubation.

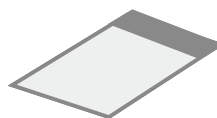
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



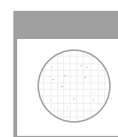
Sample Preparation



Sampling



Incubation



Enumeration

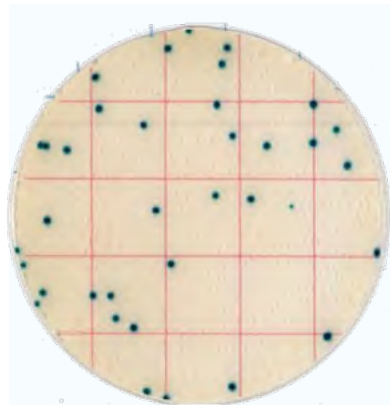
This Shigella Count Plate (SHCP) can be used in the quantitative plating of Salmonella Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count all the red colonies.

Microbial Count Plate

MicroPad Listeria M. Count Plate



Product Code: 78173-460

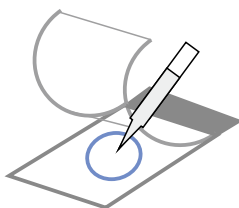
25 plates / pack

Listeria M. Count Plate (LMCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of listeria monocytogenes colonies after 36h incubation.

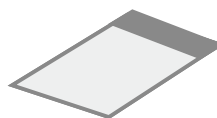
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



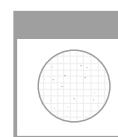
Sample Preparation



Sampling



Incubation



Enumeration

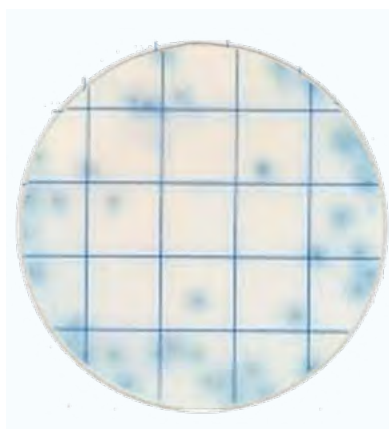
This Listeria M. Count Plate (LMCP) can be used in the quantitative plating of Listeria Monocytogenes Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All blue green colonies shall be counted regardless of the size or intensity.

Enrichment is needed before testing with this count plate.

Microbial Count Plate

MicroPad E.Coli 0157 Count Plate



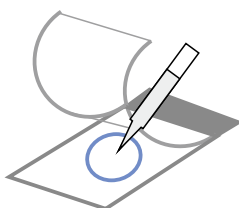
Product Code: 78172-714 25 plates / pack

E. Coli 0157 Count Plate (ECOCP) is a sample-ready-culture medium system which contains ready made dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of E. Coli 0157 colonies after 24h incubation.

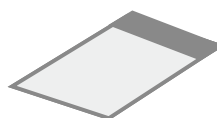
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



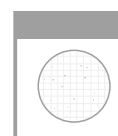
Sample Preparation



Sampling



Incubation



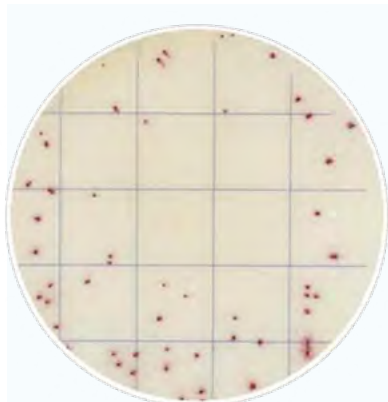
Enumeration

This E. Coli 0157 Count Plate (ECOCP) can be used in the quantitative plating of E. Coli 0157 Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. E.Coli 0157 colonies are gray with dark-blue halo, higher concentration of colonies may lead to dark background. Please further dilute the sample for enumeration. Count the gray colonies with dark-blue halo.

Microbial Count Plate

MicroPad Vibrio parahaemolyticus Count Plate



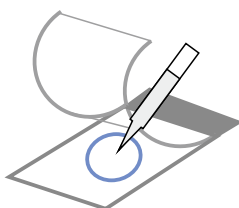
Product Code: 78173-204 25 plates / pack

Vibrio Parahaemolyticus Count Plate (VPCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Vibrio Parahaemolyticus colonies after 8-18h incubation.

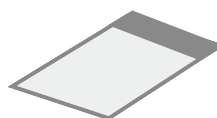
**Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.**



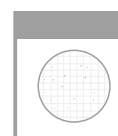
Sample Preparation



Sampling



Incubation



Enumeration

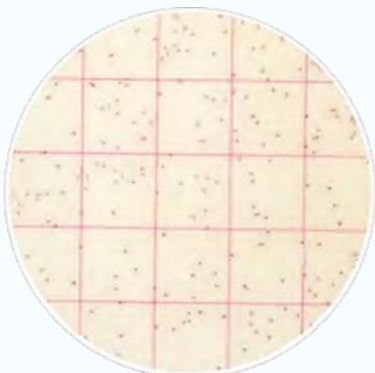
This Vibrio Parahaemolyticus Count Plate (VPCP) can be used in the quantitative plating of Vibrio Parahaemolyticus Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count all the red colonies.

Microbial Count Plate

MicroPad Psychrophilic Bacteria Count Plate



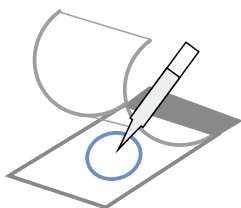
Product Code: 78172-248 **25 plates / pack**

Psychrophilic Bacteria Count Plate (PBCP) is a sample-ready-culture medium system which contains readymade dry medium, a cold-water-soluble gelling agent and indicator. It can be used in direct counting of Psychrophilic Bacteria colonies after 28-30h incubation.

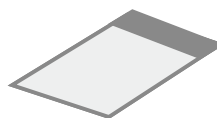
Read the user manual carefully before test, and follow the instructions.
Failure to do so may lead to inaccurate results.



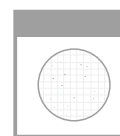
Sample Preparation



Sampling



Incubation



Enumeration

This Psychrophilic Bacteria Count Plate (PBCP) can be used in the quantitative plating of Psychrophilic Bacteria Colonies in the food and beverage industries. Other applications are available upon request. Contact your supplier for more details.

Quantitative counting of the plate can be done by a standard colony counter or by software. All red colonies shall be counted regardless of the size or intensity.

Count colonies within 10-300 CFU, count all the red colonies.

Labware

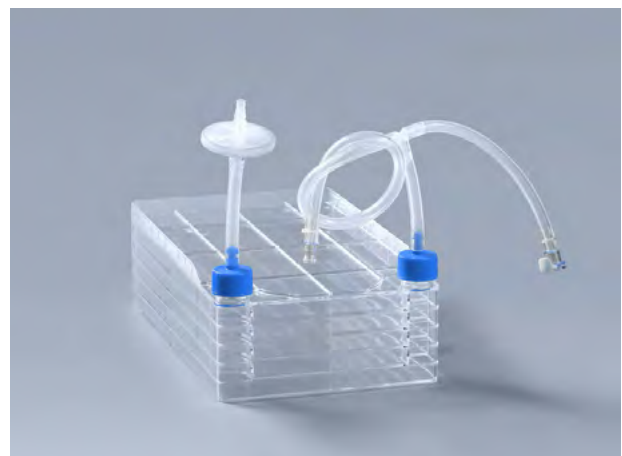
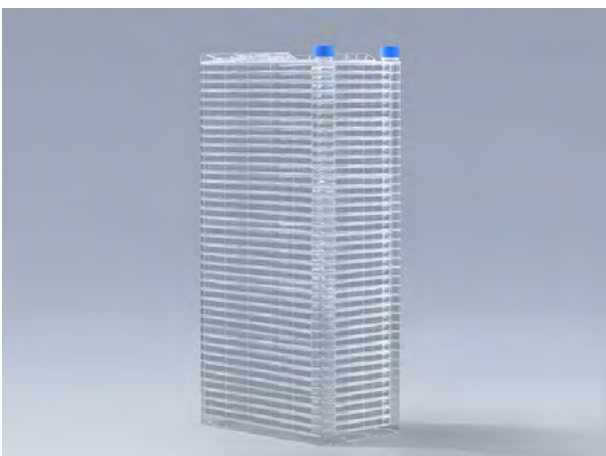
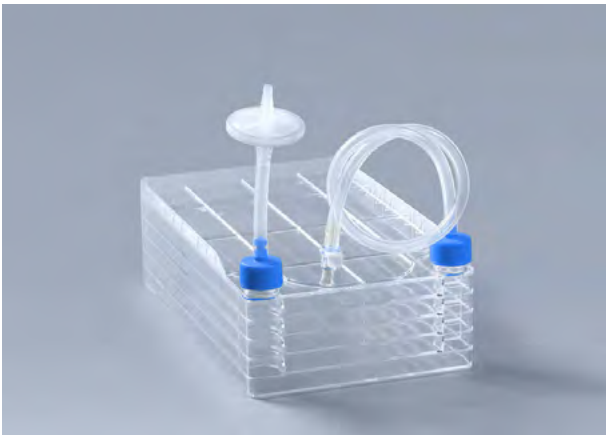
Product Collection



Multi-layers Cell Factory

Multi-layers cell factory is the adherent cells' ideal choice for industrial mass production, laboratory operations, and large-scale cell cultures. Compared with other brands, GVS cell factory has good performance in culture.

- Polystyrene (PS) material meet USP VI medical grade. Combined with heat treatment process of injection molding, the toughness product is not easy to be damaged while transferring.
- Meanwhile, the product has undergone a three-level sealing test before delivery to ensure airtightness.
- The production processes in Class-C workshop to comply with ISO13485 by using professional automatic production line.
- With the perfect quality management system, each batch of products has been tested to ensure the consistency and stability of product performance between different batches.



Multi-layers Cell Factory

- Double wild-mouth design improves the speed of filling and harvesting liquid, with hardly bubbles, Also conducive for gas exchange and high-density cell culture.
- Equipped with quick-fit seal cap (patented product), it can switch between airtight and breathable state in conventional environment (greenhouse) to meet the needs of dissolved oxygen and exhaust in different

culture stages of cells and viruses.

- The cell-factory is equipped with a complete set of sealed pipeline system, which can be connected with the liquid inlet and receiving system pipeline, and the liquid input and output are carried out by peristaltic pumps or pressure systems.

Ordering information

TC treated seal cap							
Product Code	Layer	Culture area (cm ²)	Length (mm)	Width (mm)	Height (mm)	Pcs/pack	Pcs/case
78173-508	1	635	335	205.5	48	1	8
78173-268	2	1270	335	205.5	65	1	8
78172-634	5	3175	335	205.5	116	1	6
78172-304	10	6350	335	205.5	201	1	4
78173-648	40	25400	335	205.5	711	1	2

TC treated vent cap							
Product Code	Layer	Culture area (cm ²)	Length (mm)	Width (mm)	Height (mm)	Pcs/pack	Pcs/case
78172-666	1	635	335	205.5	48	1	8
78172-638	2	1270	335	205.5	65	1	8
78172-986	5	3175	335	205.5	116	1	6
78173-100	10	6350	335	205.5	201	1	4
78173-232	40	25400	335	205.5	711	1	2

Non-TC treated seal cap							
Product Code	Layer	Culture area (cm ²)	Length (mm)	Width (mm)	Height (mm)	Pcs/pack	Pcs/case
78172-752	1	-	335	205.5	48	1	8
78173-092	2	-	335	205.5	65	1	8
78173-082	5	-	335	205.5	116	1	6
78173-240	10	-	335	205.5	201	1	4
78173-370	40	-	335	205.5	711	1	2

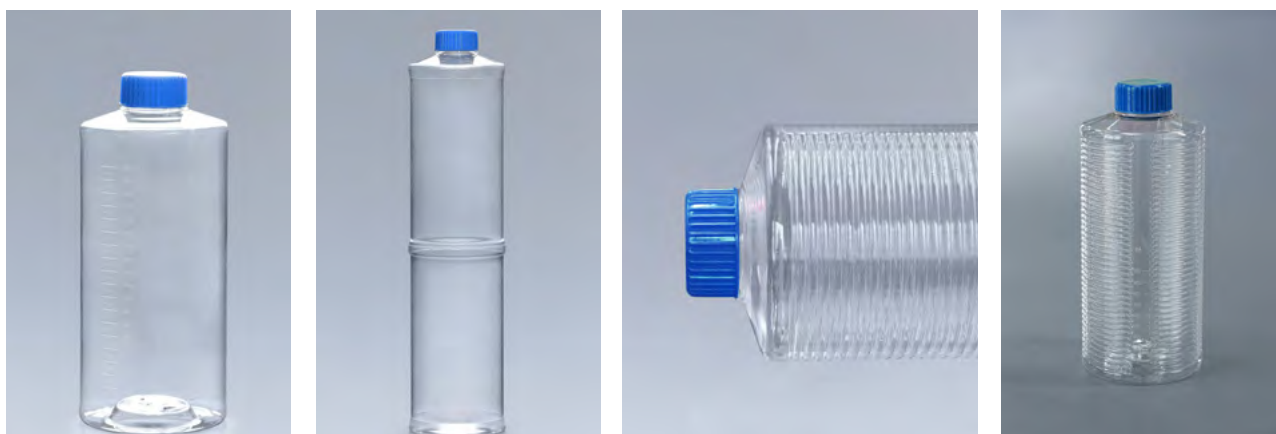
Non-TC treated Vent cap							
Product Code	Layer	Culture area (cm ²)	Length (mm)	Width (mm)	Height (mm)	Pcs/pack	Pcs/case
78172-232	1	-	335	205.5	48	1	8
78173-548	2	-	335	205.5	65	1	8
78173-390	5	-	335	205.5	116	1	6
78172-652	10	-	335	205.5	201	1	4
78173-654	40	-	335	205.5	711	1	2

Roller Bottles

Roller Bottle is a kind of disposable container which can meet the requirements of large-scale production of cells and tissues in both experimental and industrial production, and is widely used in the culture of animal and plant cells, bacteria, viruses and so on.

Material: polystyrene (PS) ,which meet USP VI medical grade.

- Vacuum plasma surface treatment technology, enhance cell adhesion ability, can also be coated with collagen on the inner surface according to customer requirements.
- cGMP standard production, each batch passes the performance test, perfect quality system from the source to ensure product quality and consistency.
- Sterile, no endotoxin, no heat source, no cytotoxicity.
- Injection, pull and blow molding process, the product bottle mouth is smooth and round, the contact sealing with the cap is better, and the product residue is less.
- 5L cell bottle adopts two-stage design to increase the contact area. The contact area between the roller bottle and the rotating bottle machine adopts the frosted structure to increase the friction coefficient of the roller bottle and reduce the sliding phenomenon.



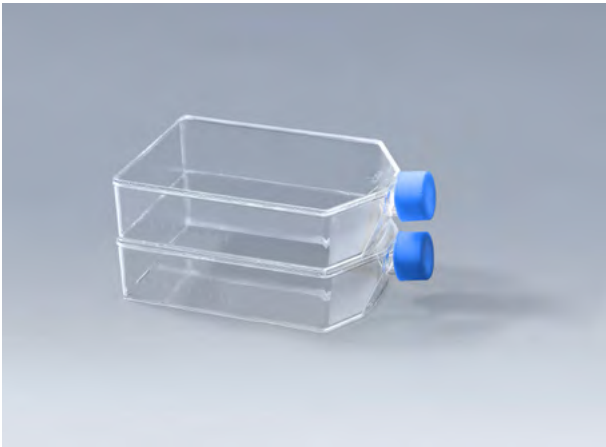
Ordering information

TC treated						
Product Code	Size	Culture area [ml]	Cap	Sterile	Pcs/pack	Pcs/case
78173-006	2 (roller bottle-Rib type)	1700	Seal cap	Yes	2	40
78172-580	2	850	Seal cap	Yes	2	40
78173-172*	2	850	Seal cap	Yes	2	40
78172-502	5	1750	Seal cap	Yes	1	20

Non-TC treated						
Product Code	Size	Culture area [ml]	Cap	Sterile	Pcs/pack	Pcs/case
78173-228	2	25%	Seal cap	Yes	2	40
78173-016*	2	25%	Seal cap	Yes	2	40
78173-054	5	25%	Seal cap	Yes	1	20

* black print bottle

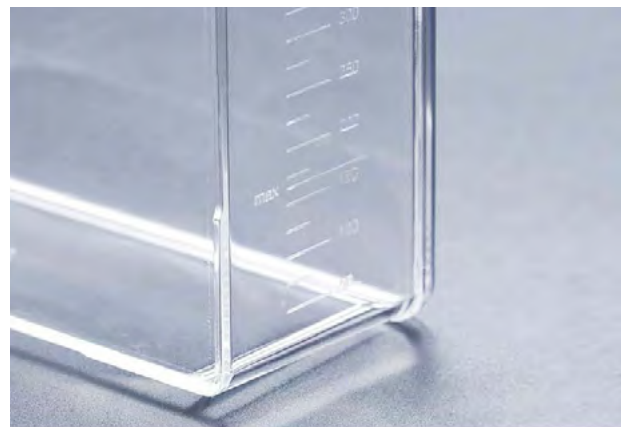
Cell Culture Flasks



- According to different surface treatment processes, cell culture flasks can be divided into hydrophilic cell culture flask and hydrophobic cell culture flask.
- Under the same environment, the clone formation rate and growth generation of cells cultured in the cell culture flasks have reached the index of similar international products.
- High quality polystyrene (PS) materials, USP VI medical grade.
- Plasma surface treatment can maximize adhesion of cells. Culturing for 48h, Vero cell growing condition is good as international famous culture flask.
- Innovative angled neck design provides good pipette and cell scraper access.
- The whole production is in the C-class purification

workshop. According to ISO13485 quality system management and the use of automatic equipment production, no direct contact with personnel, good product consistency, and small differences between batches.

- Sterile, DNase-free, RNase-free, endotoxin content < 0.1 EU/mL.
- According to different culture requirements, there are vent cap and seal cap optional.
- Upgrade the flask angle and bottom arc design to easily obtain a complete growth surface and make subsequent operations easier.



Cell Culture Flasks

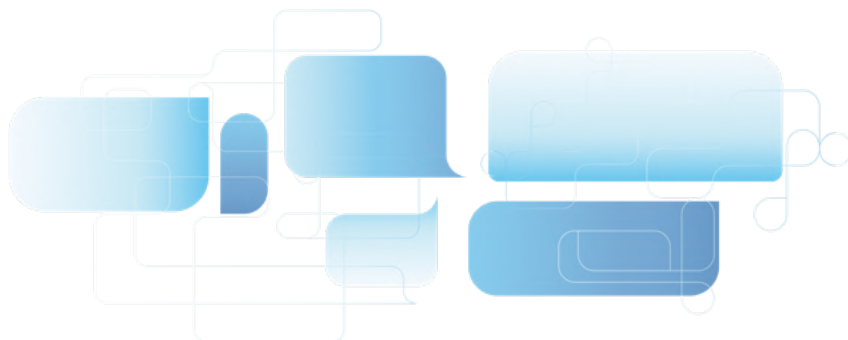
Ordering information

TC Treated Flask with Seal Cap					
Product Code	Size	Culture area [cm ²]	Cap Type	Pcs/pack	Pcs/case
78173-520	25 cm ²	25	Seal cap	10	200
78173-266	75 cm ²	75	Seal cap	5	100
78172-332	225 cm ²	225	Seal cap	5	25

TC Treated Flask with Vent Cap					
Product Code	Size	Culture area [cm ²]	Cap Type	Pcs/pack	Pcs/case
78172-318	25 cm ²	25	Vent cap	10	200
78172-976	225 cm ²	225	Vent cap	5	25

Non-TC Treated Flask with Seal Cap					
Product Code	Size	Culture area [cm ²]	Cap Type	Pcs/pack	Pcs/case
78172-608	25 cm ²	-	Seal cap	10	200
78173-688	75 cm ²	-	Seal cap	5	100
78172-796	175 cm ²	-	Seal cap	5	40
78172-808	225 cm ²	-	Seal cap	5	25

Non-TC Treated Flask with Vent Cap					
Product Code	Size	Culture area [cm ²]	Cap Type	Pcs/pack	Pcs/case
78172-916	25 cm ²	-	Vent cap	10	200
78172-460	75 cm ²	-	Vent cap	5	100
78172-616	175 cm ²	-	Vent cap	5	40
78173-202	225 cm ²	-	Vent cap	5	25



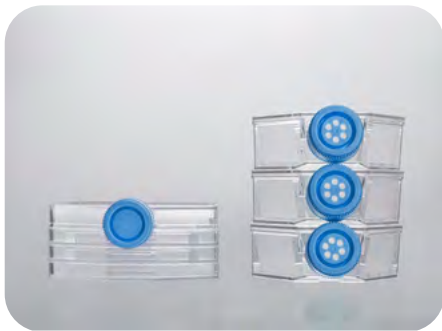
Multi-layer Cell Culture Flasks

Multi-layer cell culture flasks 3-layers and 5-layers are available, which providing 525 cm² and 875 cm² cell growth surface area respectively, they are equivalent to 3 and 5 times the surface area of the T-175 culture flask. The higher-capacity design make cell culture faster, easier, and more efficient.

- Cap Type: Plug Seal Vent
- Surface: TC treated
- Flask Body: Polystyrene (PS)
- Flask Cap: High-density Polyethylene (HDPE)
- Filter Membrane: Polytetrafluoroethylene (PTFE)
- Conforming to USP Class VI standards



Five-layer flasks comparison



Three-layer flasks comparison



Vent Cap



Plug Seal Cap

Feature

- The medium can be evenly distributed across each layer, providing a consistent culture environment for uniform cell growth
- The surface treatment of each layer is uniform and stable, effectively guaranteeing large-scale cell cultures
- Cells and reagents can be mixed directly in the flask, with no leakage or splash between layers, saving time and reducing the risk of contamination
- Suitable for 10mL serological pipets to liquid aspiration/replenishment or cells harvesting directly in the flask
- Every flask is printed lot No. for quality traceability
- Sterilized by irradiation, SAL 10⁻⁶
- DNase/RNase free, Non-pyrogenic, Non-cytotoxic

Ordering information

Product Number	Layer	Surface	Cell Growth Area(cm ²)	Type of Cap	Sterile	Qty Per Bag/Case
78172-536	3	TC treated	525	Plug Seal	Y	2/12
78173-140	3		525	Vent	Y	2/12
78173-632	5		875	Plug Seal	Y	1/8
78172-622	5		875	Vent	Y	1/8

Multi-Well Cell Culture Plates



- High quality polystyrene (PS) raw material, conforming to USP VI medical grade, excellent optical and chemical properties to ensure product stability and easy microscopic observation.
- Vacuum plasma surface treatment and uniform well to ensure well consistency.
- Cellular biocompatible (ISO:10993), sterile and endotoxin free.
- The lid well design ensure the gas exchange, reduce the risks of cross-contamination and evaporation.
- Alphanumeric marked wells, easy for identification.

Ordering information

Product Code	Spec	Single Well Surface Area (cm ²)	Recommended Operating Volume (ml/well)	pcs/case	Treat Method	Packing
78172-890	6 wells	9.5	1.900-2.900	50	TC	Box
78172-772	12 wells	3.8	0.760-1.140	50	TC	Box
78172-918	24 wells	1.9	0.380-0.570	50	TC	Box
78173-650	48 wells	0.95	0.190-0.285	50	TC	Box
78173-474	96 wells	0.32	0.100-0.200	50	TC	Box
78173-568	6 wells	9.5	1.900-2.900	50	Non-TC	Box
78173-078	12 wells	3.8	0.760-1.140	50	Non-TC	Box
78173-496	24 wells	1.9	0.380-0.570	50	Non-TC	Box
78173-658	48 wells	0.95	0.190-0.285	50	Non-TC	Box
78172-334	96 wells	0.32	0.100-0.200	50	Non-TC	Box

Cell Culture Dish

Cell culture dishes are made from polystyrene (PS) materials and are suitable for laboratory inoculation, marking, weighing, separation and treatment of tissue or cells.



Features

- Uniform thickness, no distortion for excellent observation.
- Easy to grip with gear ring design, reduce contamination risk.
- The ring protrusion on the cover is closely combined with the bottom to facilitate storage and reduce medium volatilization.
- Open petri dish lids with regular protrusions are available.
- Vacuum plasma surface treatment for ideal adhesive performance.
- No pyrogen, endotoxin free, no cytotoxic.
- Sterile by Gamma irradiation, SAL $<10^{-6}$.

Ordering information

TC treatment				
Product Code	Size (mm)	Min Package	Sales package	Pcs/case
78173-502	150	5pcs/pack	20packs/case	100

Non - TC treatment				
Product Code	Size (mm)	Min Package	Sales package	Pcs/case
78172-920	60	10pcs/pack	50packs/case	500
78173-556	100	10pcs/pack	30packs/case	300
78173-244	150	5pcs/pack	20packs/case	100

Glass Bottom Dishes

GVS 35mm Glass Bottom Dishes offer the flexibility to convert your culture device into an imaging device. This allows a smooth transition from cell culture to cell analysis with the same seeding density, media volume, and culture conditions. The Dishes combine the convenience of a standard 35 mm cell culture dish with the imaging benefits of cover glass to provide the optimum optical characteristics required for high-magnification microscopy and confocal image analysis.

Application and Features

- Glass bottom thickness: 0.16-0.19mm
- TC Treated
- Working volume: 3ml
- PS material, the bottom glass is made of borosilicate glass material, medical grade glue bonding
- No cytotoxicity, no pyrogen, no endotoxin
- Sterile

Used in confocal laser microscopy, fluorescence microscopy, phase contrast microscopy, live cell imaging, differential interference contrast, fluorescence in situ hybridization (FISH) and other cell culture observation experiments



Ordering information

Product Code	Description
78173-030	15mm glass bottom cell culture dish, PS material dish with 0.16-0.19mm cover glass, TC treated, sterile.
78172-378	20mm glass bottom cell culture dish, PS material dish with 0.16-0.19mm cover glass, TC treated, sterile.

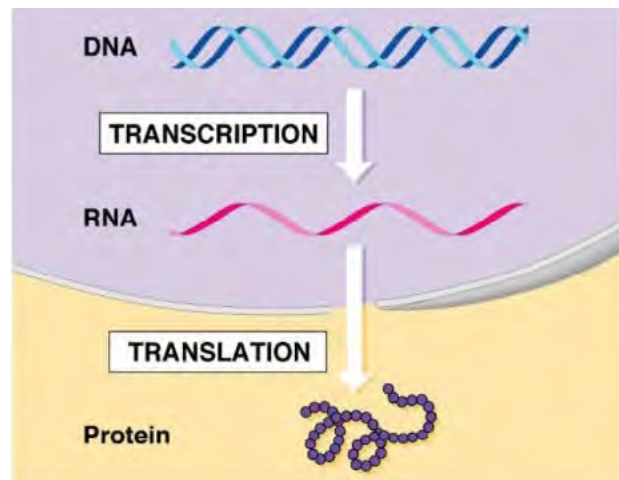
Reagent & Chemicals

Product Collection



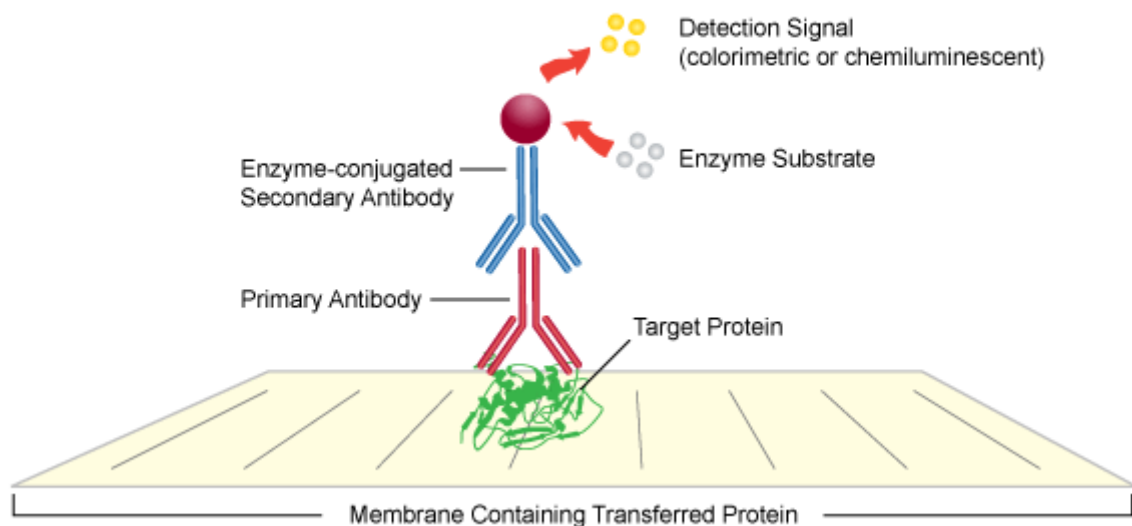
Reagent & Chemicals

Molecular analysis studies subcellular components such as proteins and nucleic acids (DNA, RNA). These molecules can be detected by various blotting techniques. The sample of interest is separated according to size by electrophoresis through a gel. Molecules from the sample are transferred and bound to a microporous membrane. Then, specific molecules of interest are detected using another molecule which specifically binds to the molecule of interest and can be detected by color, light or radioactivity.



Western Blot

Western blotting is a common and important technique used in molecular biology. It is used to detect a specific protein or protein fragment from a complex mixture such as a cell lysate, tissue extract, blood or serum sample or culture supernatants. The complex mixture is separated according to size by gel electrophoresis and then transferred to a membrane. A protein of specific interest is immunodetected using primary and secondary antibodies.



Western Blot Application Examples:

- Protein expression and modification studies, may be quantitative;
- Amino acid analysis;
- Diagnostics development;
- Medical diagnosis such as for HIV and Lyme disease.

Reagent & Chemicals

Electrophoretic separation of proteins

Separation into polyacrylamide gel according to molecular weight. In order to separate the proteins of lower molecular weight, use of more concentrated gel is required.

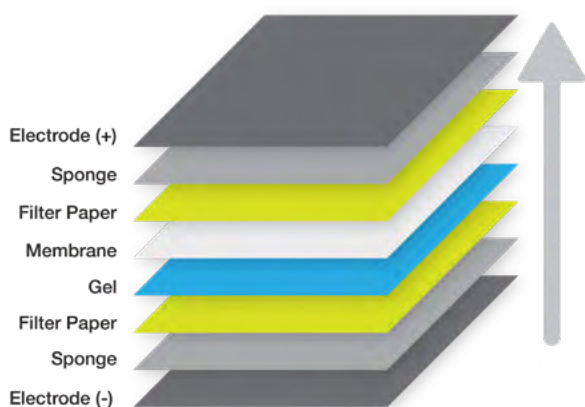
Transfer of proteins

Transfer from gel onto membrane followed by:

- Blocking;
- Applying a primary antibody specific for your protein of interest;
- Applying secondary antibody that will recognize the primary antibody.

Role of protein binding

Set up for transfer



TYPICALLY TWO TYPES OF MEMBRANES:

- Nitrocellulose (hydrophilic)
- Polyvinylidene fluoride (hydrophobic)

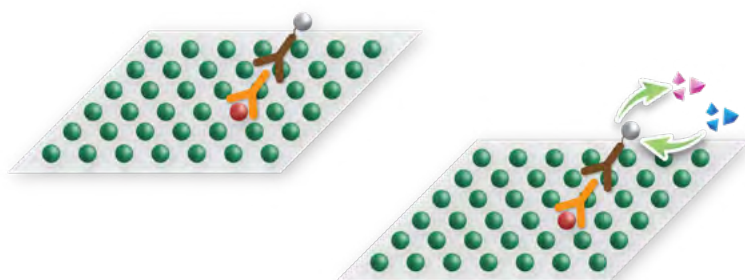
Protein to membrane binding interactions:

hydrophobic, electrostatic, dipolar



Detection of proteins

Proteins can be detected by immunodetection methods which use enzyme conjugated/labeled secondary antibodies. When the enzyme substrate is added, a product is formed. This product can be detected by fluorescence, colorimetrically, or by chemiluminescence. Enhanced chemiluminescence (ECL) produces light as a by-product when the substrate is catalyzed by the enzyme. This light is then captured on X-ray film or by a digital imaging system.



Reagent & Chemicals

Transfer Membranes

Unlike many transfer membrane suppliers, GVS Filter Technology manufactures all of its nitrocellulose, PVDF membranes that we sell. Our transfer membranes are used in key research and testing done around the world.

PVDF

The PVDF-Plus is a naturally hydrophobic transfer membrane designed to deliver the highest binding capacity and lowest background in protein analysis applications.

Nitrocellulose

GVS Filter Technology manufactures two pure nitrocellulose transfer membranes. NitroBind is the classic unsupported pure nitrocellulose membrane used for all protein and immunoblotting applications. NitroPure is a supported pure nitrocellulose membrane combining the characteristics of nitrocellulose with the strength of nylon. It outperforms standard nitrocellulose in reprobing applications of DNA/RNA/Protein when extensive handling is required. Most other suppliers buy membranes from a manufacturer and sell them under their label. The chart below shows which of the market leaders actually make the transfer membranes they sell.

Membrane	Features	Benefits	Choose by Detection Systems	Choose by Procedures
NitroPure	Pure Nitrocellulose	Pure nitrocellulose is the membrane of choice for protein and immunoblotting techniques, as well as any other procedures that require optimum resolution. Binding Capacity - 100 µg/cm ²	Radiolabeled, Chromogenic and Chemiluminescent Detection Systems	Westerns Protein & Immunoblotting Northerns Southern
NitroPlus	Supported Pure Nitrocellulose	Supported pure nitrocellulose is used in procedures requiring the highest sensitivities, low backgrounds and rigorous handling. The membrane can be reprobed many times. Binding Capacity 100 µg/cm ²	Radiolabeled Detection Systems Chemiluminescent and Biotinylated Detection Systems	Northern Southern Multiple Rehybridizations Colony and Plaque Lifts
PVDF-Plus	Hydrophobic PVDF Membrane	Hydrophobic PVDF membrane is designed for protein sequencing, western transfers and amino acid analysis. Binding Capacity - 125 µg/cm ²	Chemical compatibility allows the use of all commonly used stains	Western Transfers Protein Sequencing Amino Acid Analysis

Selecting a Membrane

Selecting the appropriate membrane is critical to the success of a nucleic acid or protein transfer procedure.

GVS Filter Technology manufactures many types of membranes for hybridization technology, each exhibiting different performance characteristics which can directly affect the outcome of a specific technique. Below are some of the more frequently performed procedures and features of hybridization membranes.

Rehybridizations

GVS Filter Technology manufactures membranes recommended for rehybridization procedures: Magna Nylon, NitroPlus Nitrocellulose supported and NitroPure, a supported pure nitrocellulose. NitroPlus Nitrocellulose supported membranes can be most frequently reprobed. On nylon membranes, the number of reprobing steps is a function of the amount of hydrolysis to which the membrane is exposed during the protocol, and the additive effects of hot water, sodium hydroxide and an acidic environment. Sodium hydroxide solutions deteriorate the nylon matrix and are not recommended in procedures where reprobing steps are required.

The polyester support web used in manufacturing NitroPure allows the membrane to be reprobed several times. Because the binding capacity of nitrocellulose is less than that of nylon (100 µg/cm² vs. 400 µg/cm²), the potential number of rehybridizations is fewer. See pages 105-107 for more details.

UV Crosslinking

For covalent binding of nucleic acids to a transfer membrane, GVS Filter Technology membranes can be UV Crosslinked by following the manufacturer's instructions. It is particularly recommended when working with short fragments, small samples, or low numbers of base pairs, because of the improved resolution this technique offers.

Reagent & Chemicals

Protein Blotting

NitroPure nitrocellulose and PVDF-Plus membranes are recommended for use in protein blotting. Nitrocellulose membranes are able to be more thoroughly blocked, reducing the high background potential associated with protein blotting. PVDF membranes are more resistant to the harsh chemicals used in Edman degradation.

Alkaline Blotting

For more rapid transfers, an alkaline blotting procedure can be used with MagnaProbe or MagnaCharge membranes. Alkaline blotting is not recommended when reprobing is required. Please see page 125 for more details.

Staining Procedures

NitroPure, NitroPlus and PVDF-Plus membranes are recommended for procedures that require a staining step with India Ink, Coomassie Blue, Colloidal Gold, or any other commonly used stain. Nylon membranes irreversibly bind many stains.

Reducing Backgrounds

There are many sources of background problems, or low signal-to-noise ratios. Some of the most common include: contaminated probes, contaminated hybridization solutions, and incorrectly chosen stringency levels. Nonfat milk should not be used as a blocking agent as it may increase nonspecific binding. GVS Filter Technology membranes are all manufactured by strict quality control procedures, ensuring a uniform membrane with consistently low backgrounds. Please refer to pages 91-93 for more details.

Troubleshooting Common Blotting Problems

Many blotting problems can be eliminated by observing the following recommendations. Blotchy or incomplete transfers are caused by poor contact between the gel and the membrane. Even after careful smoothing of the membrane to the gel, incomplete degassing of transfer solutions can cause air pockets to form. Evolving gas from Tris or, in the case of protein transfers, methanol, can disrupt the tight contact necessary between the membrane and the gel for successful transfers. Smeared or skewed bands are often caused by uneven contact between the gel and the membrane, or the membrane and the chromatography paper. To avoid this problem, roll a pipet down the membrane after it has been applied to the gel, and once again over the chromatography paper after it has been applied to the membrane. Do not move the membrane until the transfer is complete, as this will cause smearing.

Protocols for Protein Applications

NitroPure and NitroPlus Nitrocellulose Membranes

Gel Preparation

Western (Protein) Blotting

Gels should be stained after transfer with Coomassie Blue, Fast Green, Amido Black, or any other appropriate stain.* Soak the gel for 1 hour in a transfer buffer made of: 25 mM Tris-HCl/pH 8.0, 0.15 M glycine, 20% methanol. *GVS Filter Technology does not recommend staining before transfer. Proteins may precipitate in the membrane and not be able to transfer.

Transfer Membrane Preparation

Completely soak the membrane in deionized water, and then in transfer buffer.

Electroblotting

Assemble the membrane and gel in the electroblotting unit. Place the membrane on the anode (positive) side of the gel. Transfer according to manufacturer's instructions. Remove and wash thoroughly with transfer buffer.

Capillary Blotting

Prepare gel assembly by the method of Southern (see page 115). Transfer for 2 hours to overnight. Use transfer buffer of 10 mM Tris-HCl/pH 7.5. After the transfer step, determine transfer efficiency by staining the blot or gel by standard methods.

Reagent & Chemicals

Blocking Procedures

Step 1: First Wash

Block the blot in PBS buffer (0.9% NaCl, 10 mM sodium phosphate/pH 7.2) containing 5% BSA, Tween 20 or high purity gelatin for 1 hour, with gentle agitation.

Step 2: Primary Antibody Binding

Remove the PBS buffer solution from blot completely. Dilute the first antibody in 50 ml of fresh PBS buffer solution. Incubate the blot in the PBS blocking buffer/antibody solution for 1 hour at 37°C with gentle agitation. Use a ratio of 5-10 ml of solution to 100 cm² of membrane.

Step 3: Second Wash

Wash the membrane in 100 ml of fresh PBS buffer solution (without antibody) with 0.1-0.3% Tween-20. Agitate in a shaker for 5 minutes. Repeat the wash step 2 times. [Note: Increasing the number of short washes reduces the potential for high backgrounds].

Detection

Thoroughly remove the PBS buffer solution and overlay the blot with an antisppecies (second) antibody, or with protein A (radiolabeled or enzyme linked) for 1-2 hours at room temperature with gentle agitation. The final concentration of radiolabeled second antibody solution should be 1-2x 10⁵ dpm/ml of PBS buffer solution. Enzyme-linked second antibody solutions should be made at a 1:1000 titer in PBS buffer solution. Repeat the wash step described in the procedure above.

Signal Development

The choice of signal development method is dependent on the type of probe used. Radiolabeled probes are developed and quantitated by autoradiography. Enzyme-conjugated labels (horseradish peroxidase or alkaline phosphatase) are developed

and quantitated with the appropriate substrate solution.

Probe Removal (Stripping)

Do not allow the filter to become dry, or irreversible binding of the probe will result.

Wash the membrane at 60°C for 30 minutes in 0.05 M sodium phosphate/pH 6.5, 10.0 M urea, 0.1 M 2-mercaptoethanol, or wash the membrane in 0.2 M glycine-HCl, 0.5 M NaCl for 5 minutes. Rinse in 0.1 M NaOH or 0.5 M Tris for 10 minutes.

PVDF-Plus

Western Blot General Protocol

Main Solutions and Reagents for running; transfer and blocking

Running buffer 10X:

- Tris base: 250 mM
- Glycine: 1.90 M
- SDS: 1%.

The pH of the buffer should be 8.3 and no pH adjustment is required. Store the running buffer at room temperature and dilute before use.

Running buffer 1X:

10% 10X Running buffer
90% DW H₂O

Tris Glycine Buffer 1X:

25 mM Tris base
190 mM Glycine

Transfer Buffer:

20% MeOH
0.25X Tris Glycine buffer

Phosphate Buffered Saline (PBS) 1X:

137 mM NaCl
2.7 mM KCl
10 mM Na₂HPO₄
1.8 mM KH₂PO₄

PBS Tween (PBST) 1X:

0.05% Tween
99.95% PBS 1X

Blocking Buffer:

5% skim milk (or Bovine Serum Albumin - BSA)
95% PBST

Reagent & Chemicals

PROCEDURE

Electrophoresis – protein separation

1. Prepare appropriate SDS-Polyacrylamide (SDS-PAGE) gel for electrophoresis.
Type of SDS-PAGE gels according to the protein size; the lower is the protein size, the higher concentration of gel should be used.
2. Prepare the sample to be loaded in the wells of SDS-PAGE gel.
Preparation of the sample and the sample buffer depends on the type of the protein and manufacturer's recommendations.
3. Load protein marker and equal volumes of protein sample into corresponding wells of SDS-PAGE gel.
Fill the empty wells with the sample buffer.
4. Fill the electrophoresis tank with running buffer.
5. Run the gel in following conditions:
 - a. 120 V for 20-30 minutes (or until the sample reaches the stacking gel);
 - b. 180 V for 30-45 minutes (separation of the proteins under constant voltage).

Electrotransfer of Proteins

1. In case of PVDF membrane perform membrane equilibration by:
 - a. Immersing membrane in Methanol for 1 minute;
 - b. Followed by immersion of membrane in DW water for 5 minutes;
 - c. Followed by immersion of membrane in Transfer Buffer for 10 minutes.
Membrane must be wet at all times.
2. Assemble the transfer sandwich according to scheme presented in Figure 1.
Ensure there are no bubbles between the gel and the membrane.
3. Place the cassette in the transfer tank and fill the Electroblotting tank with the transfer buffer (ensure that the sandwich is covered with the buffer).
4. Run the Electroblotting for 1 hour at 120 V in an ice bath.
Running conditions might need optimization.

Blocking and antibody incubation

1. Incubate membrane for 1h in the blocking buffer at room temperature or overnight at 4°C with constant agitation.
The active side of the membrane must always be in contact with the solution.
2. Place the blot in the primary antibody solution and incubate with agitation for 1 hour at room temperature.
The solution should move freely across the surface of the membrane [dilution of the antibody depends on the producer recommendation].
3. Wash membrane by:
 - a. Immersion in PBS-Tween (PBST) for 10 minutes with agitation;
 - b. Immersion in PBS-Tween (PBST) for 5 minutes with agitation (2 times).
4. Place the blot in the secondary antibody solution (HRP conjugates) and incubate with agitation for 45 minutes at room temperature.
Dilution of the antibody depends on the producer recommendation.
5. Wash the membrane according to the washing steps described in point 3 of Blocking and antibody incubation section.

Detection via chemiluminescence

1. Prepare a 1:1 mixture of chemiluminescent substrate (ECL HRP, depending on sensitivity choose Light Wave; Light Wave Plus or Light Wave Max).
2. Place the blot in the container with substrate and incubate for 3 minutes.
3. Remove the excess of the solution off the membrane.
4. Place membrane in blot development folder and gently smooth out all the bubbles using a roller.
5. Expose the film to the imaging system.

Reagent & Chemicals

Troubleshooting Guide and Application Tips

Problems and Solutions Unsuccessful Rehybridizations

My membrane is deteriorating during the rehybridization procedure?

If so, what type of membrane are you using? GVS Filter Technology manufactures one type of membrane recommended for rehybridization procedures: NitroPlus, a supported pure nitrocellulose. A more resilient membrane during applications requiring multiple reprobes. Nitropure (a supported nitrocellulose) was developed for this reason. The polyester support web used in manufacturing NitroPlus allows the membrane to be reprobed several times.

My application demands an extensive number of reprobes and I'm losing signal?

If so, what type of membrane are you using? Because the binding capacity of nitrocellulose is less than that of nylon (100 $\mu\text{m}/\text{cm}^2$ vs. 400 $\mu\text{m}/\text{cm}^2$), the potential number of rehybridizations is fewer as compared to nylon membranes. The number of reprobing steps is a function of the amount of hydrolysis to which the membrane is exposed during the protocol, and the additive effects of hot water, sodium hydroxide and an acidic environment.

My probe is not stripping from the membrane, how should I change my procedure?

Did you let the membrane dry after the initial probe was applied? Drying causes irreversible binding of DNA to microporous membranes. If this has occurred, look through the helpful tips listed below.

My probe won't strip from the membrane, how can I rescue this blot?

Try preparing a new probe and using a different detection protocol. For example, if you prepared a biotinylated probe and detected with a streptavidin conjugate, omit the biotin-streptavidin step during rehybridization by using a directly conjugated probe, such as an alkaline phosphatase conjugated probe. If you used a radioactive probe, use a chemiluminescent system to detect after the next hybridization (or vice versa). If you have enough time and are using radioactive probes (e.g., pgs 106-107), simply let your first probe decay before the second round of hybridization.

Signal Problems

The nucleic acid did not transfer completely to the membrane, what should I do?

Blotchy or incomplete transfers are caused by poor contact between the gel and the membrane. Even after careful smoothing of the membrane to the gel, incomplete degassing of transfer solutions can cause air pockets to form. Evolving gas from Tris or, in the case of protein transfers, methanol, can disrupt the tight contact necessary between the membrane and the gel for successful transfers.

My signal is low, what are the common reasons for this?

When you have low signal, it is best to check your reagents by performing extra controls. The most common reason for poor signal is a bad probe. Prepare a new probe and perform a dot blot comparing the old and new probes. Do you see a difference between the probes? Even nonradioactive probes can deteriorate during storage. Is the signal weak for the new probe as well? Then your detection enzymes may be bad or the reagents used to prepare the probe are bad. You might also blot a small amount of unlabeled complementary DNA and hybridize to the new probe. Are you seeing signal from the blotted probe but not the hybridized DNA? If so there could be a problem with your hybridization protocol, such as the wash temperature or your buffers. If you're using nonradioactive detection methods, test your enzymes and substrates as well.

Background Problems

Everything was working fine and now suddenly I have high backgrounds, Why?

Did you make up a new probe? If so, was there adequate separation of the unincorporated label from the incorporated? Are you using old solutions? There may be contamination. Usually in these cases it is best to prepare new solutions, new probes and use new reagents. This is often the fastest way to get your system working again.

Miscellaneous

My membrane changed color during my blotting procedure, should I be concerned?

No. Slight color changes in GVS Filter Technology new positively charged membranes are expected and have no effect on results. These color changes will vary according to the blotting procedure used and the pH of solutions. GVS Filter Technology uses this color change to ensure quality during the manufacturing procedure.

Reagent & Chemicals

High Backgrounds

Poor agitation during prehybridization and hybridization steps can lead to insufficient blocking of the entire membrane. Due to the strength of the internal support web, NitroPlus can withstand higher levels of agitation without tearing or ripping. Incorrect probe concentration can occur when using dextran sulfate in hybridization or prehybridization solutions. Dextran sulfate causes the effective concentration of the probe to increase because it excludes the probe from the volume of solution the dextran sulfate polymer occupies. When using dextran sulfate, lower the probe solutions to less than 10 ng/ml of the solution. When not using dextran sulfate, maintain the optimum probe concentration at 25-40 ng/ml of solution. Residual agarose on membranes can cause a fuzzy background to appear on blots. Be sure to wash nylon membranes with 5 x SSPE at 60°C, after the immobilization step. Due to the strength of the membrane, supported membranes (NitroPlus) can be more easily washed without tearing or ripping.

Troubleshooting Gel Casting Procedures

Troubleshooting blotting problems begins with the correct gel casting procedures. Skewed, streaked, incomplete, or non-uniform transfers can be the results of poorly cast gels. The following recommendations are made for setting up the gel.

Gels greater than 4mm thick can interfere with the free transfer of nucleic acids.

Be sure that the gel tray is level before casting the gel. If the surface is not level, non-uniform transfers may result. Maintain a gel casting temperature of 55-70°C degrees, and be sure that the gel particles are completely dissolved. Undissolved agarose particles can result in streaked or skewed bands. Immediately after gel casting and solidification, submerge the gel slab in electrophoresis buffer. This will prevent the formation of an impermeable "skin" over the surface of the gel which can inhibit transfer of nucleic acids from the gel. After setting up the blotting assembly, be sure to:

- Invert the gel so that the underside of the gel is the side in contact with the membrane.
- Allow the transfer solutions enough time to "breathe," so that they may degas completely. Incompletely degassed transfer-solutions evolve gas after the blotting assembly is set up, and can cause air bubbles between the membrane and gel that can impede the transfer of nucleic acids.

Probe Related Background Problems

While there are several ways to decontaminate probe solutions, the following methods are two of the most efficient. The second method can be rapidly performed with minimum effort.

Method 1: Phenol/Chloroform extract the probe to remove unincorporated nucleotides, proteins, and other contaminants.

Method 2: Clean the probe by adding a small volume of the hybridization buffer to the probe and filtering it through an Abluo 25AS low protein binding cellulose acetate syringe filter. Contaminants in the probe solution will be held back by the 0.2µm filter with no probe loss caused by nonspecific binding to the filtration membrane. Probe length is also a factor contributing to background levels seen on transfer membranes. Between 250-800 base pairs is the recommended optimum length of a probe; probe lengths smaller or larger than this can lead to a low signal-to-noise ratio. Probes smaller than 250 base pairs often bind poorly and may require less stringent hybridization and wash procedures. Probes larger than 800 base pairs may contain a wider variety of size classes, which can lead to extraneous binding to the transfer membrane.

Hybridization Solution Related Background Problems

Contaminated hybridization solutions are another common source of background problems. Hybridization solutions should be filtered with a pure cellulose acetate Abluo 25AS syringe filter, to remove contaminants. Additionally, all solutions and buffers should be made fresh before each transfer with sterile, double-distilled, deionized water, and very high grade reagents. After fresh buffers are made, they should be filtered with an Abluo 25AS syringe filter to ensure that no contaminants remain in the solution. Formamide-based hybridization solutions are a frequent source of background noise, and the formamide must be freshly made and deionized.

Optimized Blocking Solutions

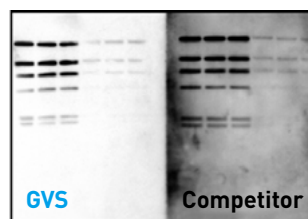
A concentration of 5-7 x Denhardt's solution is recommended for use with nylon membranes. Exceeding this level can lead to quenching of the signal.

Backgrounds Associated with Reprobing

A follow-up autoradiograph after probe removal is strongly recommended to determine if the probe has been fully stripped. Otherwise, backgrounds can appear in blots that have not been fully erased.

Reagent & Chemicals

Nitrocellulose



GVS Nitrocellulose Pure Transfer Membrane is the membrane of choice for all protein or immunoblotting applications. The high sensitivity of GVS Nitrocellulose Transfer Membrane ensures excellent results in all transfers, especially in protein blotting.

Unlike PVDF, nitrocellulose wets out naturally, does not require methanol, and will not turn hydrophobic during the transfer process.

Nitrocellulose is very easily blocked and does not need the many blocking steps required with PVDF.

Excellent results will be obtained with all detection systems: antibody/antigen, radiolabeled, biotinylated, and chemiluminescent, giving you a great amount of flexibility in designing your procedure.

Supplied in various porosity and format.

Features & Benefits

- For procedures that require optimum resolution
- Membrane of choice for protein or immunoblotting applications
- Low background, easily blocked
- BSA binding capacity up to 100 µg/cm²
- Wets out naturally
- Compatible with all detection systems

Typical Applications

- Western Blotting
- Protein & immunoblotting
- Northern Blotting
- Southern Blotting
- Dot/slot blotting
- Radiographic, chromogenic and chemiluminescent detection systems

Product	Competitors
	Amersham HyBond-C - BioRad Nitrocellulose - Millipore Immobilon-NC Plus - Schleicher & Shuell (S&S) Protran

Ordering information

Pore sizes	Dimensions (mm)	82mm	100x100mm	102x133mm	150x150mm	200x200mm
	Packaging	50/pk	10/pk	10/pk	5/pk	5/pk
0.22 µm		-	490007-474	-	490007-482	-
0.45 µm		490007-492	-	490007-496	-	490007-494

Pore sizes	Dimensions (mm)	300x500mm	150x3000mm	200x3000mm	300x3000mm
	Packaging	5/pk	1/pk	1/pk	1/pk
0.22 µm		-	490007-488	490007-486	490007-480
0.45 µm		490007-498	490007-502	490007-500	490007-490

Reagent & Chemicals

Supported Nitrocellulose



GVS Supported Nitrocellulose Transfer Membrane combines the binding characteristics of nitrocellulose membrane with the strength of nylon membrane. It can be easily used in any protocol utilizing unsupported nitrocellulose transfer membrane.

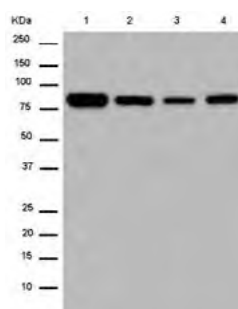
Supplied in various porosity and format

Features & Benefits

- Supported for procedures requiring rigorous handling
- Strong - will not curl, bend or crack after baking
- High sensitivities, low backgrounds
- Multiple reproblings
- BSA binding capacity up to 100 µg/cm²
- Triton Free

Typical Applications

- Northern Blotting
- Southern Blotting
- Multiple re-hybridizations
- Colony/plaque lifts
- Dot/slot blotting
- Radiographic detection systems
- Chemiluminescent detection systems
- Biotinylated detection systems



All lanes : Anti-Furin antibody [EPR14674] (ab183495) at 1/5000 dilution

Lane 1 : HepG2 whole cell lysate

Lane 2 : HeLa whole cell lysate

Lane 3 : U87-MG whole cell lysate

Lane 4 : Caco-2 whole cell lysate

Lysates/proteins at 20 µg per lane.

Secondary

Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/1000 dilution

Predicted band size : 87 kDa

Product	Competitors
	Amersham HyBond-C Extra - Amersham HyBond-C Super Biorad Supported Nitrocellulose

Ordering information

Pore sizes	Dimensions (mm) Packaging	70x84 mm 10/pk	100x100 mm 10/pk	150x150 mm 5/pk	200x200 mm 5 /pk	200x3000 mm 1/pk	300x3000 mm 1/pk
0.22 µm		-	490015-798	490007-444	-	490007-446	490007-436
0.45 µm		1214978	-	490007-426	490007-428	490007-432	490007-418

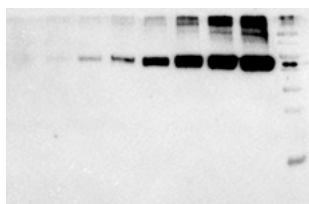
Pore sizes	Dimensions (mm) Packaging	82mm 50/pk	85mm 50/pk	300x500mm 5/pk	150x3000 1/pk
0.22 µm				490007-454	490007-448
0.45 µm		490007-420	490007-422	490007-430	490007-434

Reagent & Chemicals

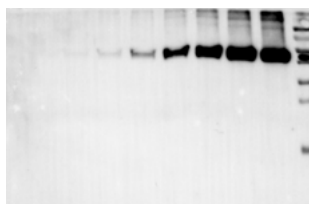
Polyvinylidene Fluoride PVDF



GVS



Competitor



Images were obtained by following GVS Western Blot General Protocol

Cell Lane: HeLa Whole Cell

Detection substrate: Light Wave Plus

Primary antibody: Beta Actin Polyclonal Antibody (dilution 1:1000)

Secondary antibody: Goat Anti-Rabbit IgG Antibody (H+L) (dilution 1:10000)

Analyzed protein: Beta actin, MW: 42 kDa

Product	Competitors
 PVDF Pure Unsupported PVDF	Millipore Immobilon-P - Amersham HyBond - BioRad PVDF Schleicher & Shuell (S&S) Westran

GVS PVDF is a naturally hydrophobic, unsupported transfer membrane. It has a high binding capacity, which prevents protein from passing through the membrane, and a low background that provides for an excellent signal-noise ratio. It also has exceptional tensile strength, preventing it from cracking, tearing, breaking or curling. This membrane also has broad chemical compatibility, which is important when used with common stains such as Amido Black, Colloidal Gold, Coomassie Blue, India Ink and Ponceau-S. GVS PVDF will not degrade, distort or shrink when a high concentration of methanol is used for destaining.

Its exceptional strength, high binding capacity and chemical compatibility make GVS PVDF ideal for use in Western blotting, immunoblotting, and solid phase assays and plaque lifts.

Features & Benefits

- Superior strength: Can withstand aggressive handling or be used with automated equipment without breaking or tearing
- Low extractables: Ensures tests will be clean with consistent results
- Exceptional sensitivity: Detects low-level components
- Hydrophobic: For high protein binding
- Lot-to-lot consistency: Quality checks ensure consistent binding for dependable results every time
- BSA protein binding capacity : 125 µg/cm²
- High range of chemical: Resistant to most commonly used chemicals compatible with chemically aggressive solvents

Typical Applications

- Western blotting
- Immunoblotting
- Solid phase assays
- Amino acid or protein analyses

Ordering information

	Dimensions (mm)	100x100 mm 10/pk	200x200 mm 5/pk	150x3000 mm 10/pk	200x3000 mm 1/pk	300x3000 mm 1/pk
Pore sizes	0.22 µm			490007-476		78893-440
	0.45 µm	490007-442	490007-438	490007-450	490007-452	490007-440

Reagent & Chemicals

Neutral Nylon 66 Membrane



GVS Neutral Nylon Transfer Membrane is a pure polymer impregnated in by an inert polyester web. It is naturally hydrophilic and optimized for protein binding and for high, reproducible binding of nucleic acids.

Reliable Quality, Increased Efficiencies

This controlled microporous Nylon 66 membrane is cast on an inert, internal support web that gives it added dimensional strength and stability to prevent cracking, tearing, curling and breaking. This added strength and durability is essential in protocols that require aggressive handling, such as colony lifts and plaque lifts.

In addition to the dimensional strength and durability of GVS Neutral Nylon Transfer Membrane, its retention of macromolecules can also be enhanced using UV cross-linking. This process can be used to maximize the signal retention of nucleic acids and preserve the integrity of DNA or RNA transfers. The purity and consistency of GVS Neutral Nylon Transfer Membrane, coupled with its added durability and sensitivity, make it an ideal membrane for use in medical research, scientific studies

or test confirmations where precise biological pattern replications, such as DNA and RNA transfers, are integral to the success of the procedure.

Features & Benefits

- Supported: has added strength and durability preventing distortion or contamination in multiple reprobings
- High binding capacity: with a nucleic acid binding capacity of approximately 350 $\mu\text{g}/\text{cm}^2$, Magna Nylon - Transfer Membrane can bind a wide range of fragment sizes, increasing the efficiency of transfers
- Hydrophilic: eliminates the need for wetting agents that can potentially interfere with biological processes
- Lot-to-lot consistency: quality checks ensure lot-to-lot consistency, both down and across the polyester web, for dependable results every time
- Maximum Operating Temperature 356°F (180°C)
- Autoclavable

Typical Applications

- Southern transfers
- Northern transfers
- Protein binding
- Microarrays
- Macroarrays
- Dot/Slot blotting
- Radiolabeled detection systems
- Non-radiolabeled detection systems
- Colony lifts
- Plaque lifts
- Library screening

Product Characteristics

Pore Size (μm)	Flow Time (s)	Volume/Vacuum (mL/in Hg)	Flow Rate (mL/min/ cm^2 @ 10 psi)	Bubble Point (psi)	Thickness (μm)
0.2	113-277	250/20	5.74-14.08	40-68	140-190
0.4	65-205	250/20	7.76-24.47	32-57	140-190

Disks and Sheets

Ordering information

Pore sizes	Dimensions Packaging	85 mm 50/pk	150x150 mm 5/pk	300x3000 mm 1/pk
0.22 μm		490007-462	-	490007-460
0.45 μm		-	490007-459	490007-456

Reagent & Chemicals

Reprobing Charged Nylon 66 (NY+)



MAGNAprobe
Reprobing Charged
Nylon

Features & Benefits

- Supported charged nylon 66 membrane
- Specifically designed for multiple reproblings
- Used for both radiolabelled & non-radiolabelled detection systems
- Can be used for alkaline blotting
- Nucleic acid binding is 450 $\mu\text{g}/\text{cm}^2$
- Maximum Operating Temperature 356°F (180°C)
- Autoclavable

Typical Applications

- Radiolabelled & non-radiolabelled detection systems
- Northern Blotting
- Southern Blotting
- Multiple Reprobings
- Alkaline Blotting
- UV Crosslinking

GVS Nylon Reprobing Charged transfer membrane is a positively charged modified nylon 66 membrane, specifically designed to allow for numerous reproblings.

The high binding capacity of 450 mg/cm^2 makes GVS Nylon ideal for all Southern and Northern applications, including alkaline blotting. GVS Nylon is ideally suited for all probes both radioactive and non-radioactive, including chemiluminescent and biotinylated detection systems.

GVS Nylon 66 reprobing Charged transfer membrane offers significantly increased binding, maximum “lot-to-lot” consistency, and excellent signal retention. The inherent charge on this nylon membrane along with its hydrophilic nature makes consistent repeatable results a reality for researchers.

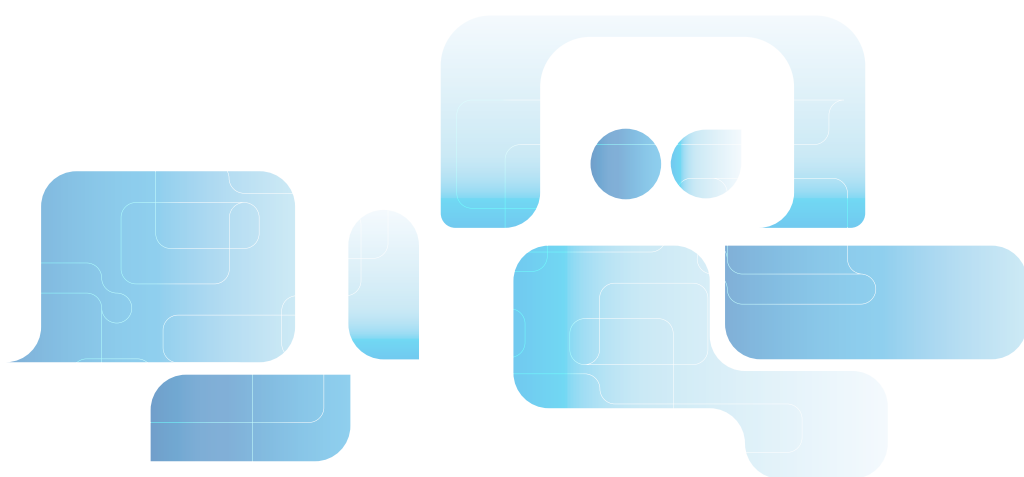
After 12 rounds of reprobing, GVS Nylon has a lower background and higher signal.

Product Characteristics

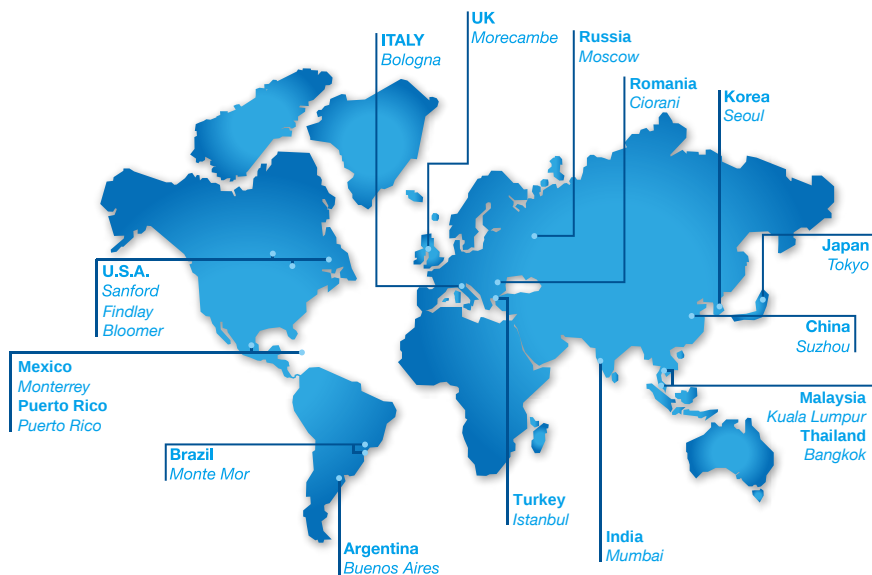
Pore Size (μm)	Flow Time (s)	Volume/Vacuum (mL/ in Hg)	Flow Rate (mL/min/ cm^2 @ 10 psi)	Bubble Point (psi)	Thickness (μm)
0.45	20-75	250/20	21.21-79.53	14-20	120-190

Ordering information

Pore sizes	Dimensions Packaging	150x3000 mm 1/pk	300x3000 mm 1/pk
	0.45 μm	78893-438	78893-446







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