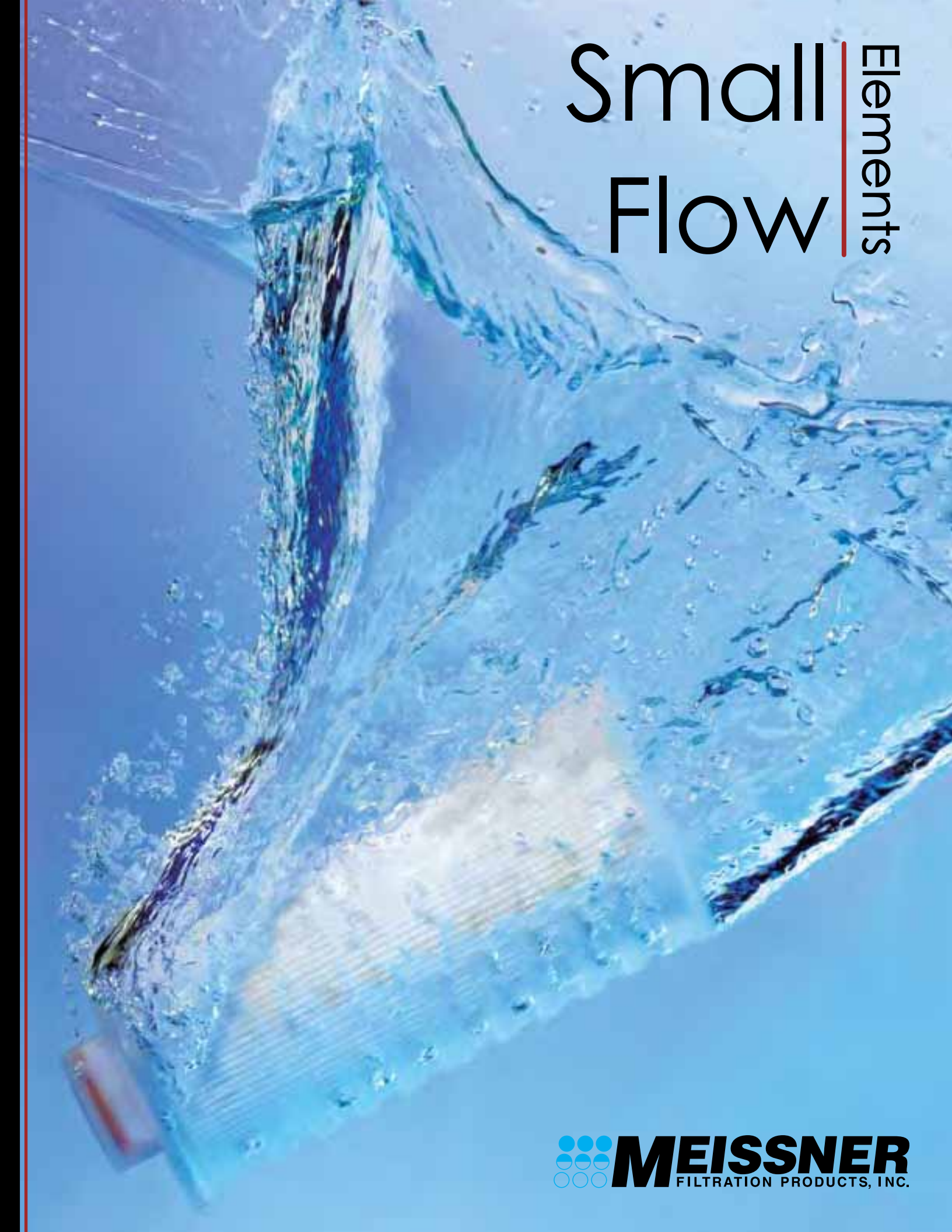


Small Flow Elements

MEISSNER FILTRATION PRODUCTS, INC.

Pure.
Practical.
Unparalleled.

Meissner Filtration Products designs, develops, manufactures and services advanced, high quality filtration products worldwide. Our sophisticated material tracking and automated manufacturing processes provide unmatched quality control and traceability, guaranteeing the highest level of product performance. Meissner Technical Services (MTS) provides customer support for selecting, sizing, installing and operating filtration systems, as well as validation testing services and documentation. Meissner works closely with clients to specify filtration products that maximize efficiency and optimize applications.

Product Description

Meissner SFE (small flow element) filter cartridges are pleated, small-area filters designed and manufactured for critical point-of-use filtration and small batch processing of both liquids and gases. SFE filters are offered in a variety of filtration media and retention ratings, providing high flow rates and throughputs, low extractables and broad chemical compatibility to satisfy numerous applications.

All materials used in the manufacture of SFE filter cartridges meet FDA requirements for food use and are biosafe in compliance with USP Class VI Plastics biological reactivity tests. Using a state-of-the-art process, the filtration media and polypropylene support components are thermally bonded to polypropylene end caps forming a durable, high strength cartridge. No glues, adhesives, epoxies or other extraneous materials are used in construction. This provides an integral filter which has excellent chemical compatibility, extremely low extractables, and withstands shocks, back pressures, and multiple sterilizations as well as the rigors of consistent use. The SFE cartridge's rugged construction offers the greatest assurance of filtration performance, reliability, and security in a wide range of fluids and applications.

SFE filter cartridges are available in nominal lengths of 2.5 in (6,4 cm) and 5 in (12,7 cm) to complement Meissner's line of 316L stainless steel SFE filter housings and to retrofit competitive small flow housings. Cartridge sealing options include a 116 internal O-ring in the outlet end cap, a 222 O-ring adapter, a 226 O-ring adapter with locking tabs and an SKR (skirt-flange) adapter.

Application/Use

SFE filter cartridges meet the critical demand for contamination control in pharmaceutical, biological, bioprocessing, electronics, chemical, food and beverage, cosmetics and other industries. SFE filters are designed for use in controlling particulate and microbial contamination in liquid and gas applications. These filters offer high reliability, security and economy for point-of-use filtration, as well as for small and medium batch processing applications. They are used in a wide variety of laboratory, pilot plant and production applications and are ideal for flow requirements less than 3 gpm (11 L min^{-1}) or 60 scfm (102 Nm^3hr^{-1}).


High purity polypropylene components provide maximum chemical resistance with minimal extractables
Available with a variety of membranes and media for optimum performance in a wide range of fluids and applications
Filtration removal ratings from 0.04 µm absolute to 99 µm
Biologically inert, non-toxic materials contain no binders, surfactants, or other extraneous substances, ensuring low extractables and rapid rinse-ups
Rugged construction withstands back pressures and multiple sterilizations
Maximum effective filtration area provides high flow rate, high contaminant capacity and long service life
Small compact size conserves space and minimizes liquid hold-up
Thermally bonded without glues, adhesives, or epoxies, ensuring purity and reliable integrity under severe process conditions

General Specifications

Materials of Construction

Filtration Media

Hydrophilic Membranes

- SteriLUX® polyvinylidene fluoride (PVDF)
- STyLUX® polyethersulfone (PES)
- EverLUX™ polyethersulfone (PES)

Hydrophobic Membranes

- Steridyne® polyvinylidene fluoride (PVDF)
- Chemdyne® polypropylene (PP)
- Ultradyne® polytetrafluoroethylene (PTFE)

Microfiber Media

- Protec® RF borosilicate glass microfiber
- Protec® RM borosilicate glass microfiber + PVDF membrane
- ALpHA® polypropylene (PP)
- Vangard® polypropylene (PP)
- DeltaMax™ polypropylene (PP) depth

Upstream Support: Polypropylene
Downstream Support: Polypropylene
Core/Outer Cage: Polypropylene
End caps: Polypropylene
Sealing Method: Thermal Bonding
O-ring Seal: Buna, EPR, silicone, Teflon® over silicone, Viton®, or Teflon® over Viton®
All materials are listed for food contact use in the Code of Federal Regulations (CFR) Title 21.

Effective Filtration Area (nominal)

2P Model: 1ft^2 (0,09 m^2)
5P Model: 2ft^2 (0,19 m^2)

Maximum Operating Temperatures and Pressures

80 psid @ 32 °F to 100 °F
(Δp 5,5 bar @ 0 °C to 38 °C)
60 psid @ 150 °F (Δp 4,1 bar @ 66°C)
30 psid @ 180 °F (Δp 2,1 bar @ 82°C)

Cartridge Dimensions (nominal)

Diameter 2.25 in (5,7 cm)
Lengths 2.5 in and 5 in (6,4 cm and 12,7 cm)

Sterilization

Inline Steam: 121 °C - 135 °C, 30-60 minutes
Autoclave: 121 °C - 135 °C, 30-60 minutes
SFE cartridges are capable of repeated sterilization cycles without loss of integrity.

Filter Element Selection

SFE filter cartridges are available with a variety of filtration media and pore size ratings for both prefiltration and final filtration applications. The following sections provide product descriptions and specifications.

SteriLUX®

Hydrophilic

A versatile hydrophilic PVDF membrane designed for critical filtration of aqueous and organic solvent-based solutions

SteriLUX® SFE filters are absolute-rated PVDF membrane filters optimized for sterile filtration, prefiltration and clarification of pharmaceutical and biological solutions. The surface-modified SteriLUX® membrane is manufactured by Meissner's proprietary process to provide immediate water-wettability, unmatched flow, high mechanical strength, thermal and chemical stability, ultra-low binding characteristics, and low extractables levels. SteriLUX® is ideal for the sterilization of parenterals, deionized water, aqueous solvents, acids and bases.

Features

- Absolute ratings from 0.1 µm to 0.6 µm
- Meets ASTM bacterial retention standards
- High flow rates at low pressure drops
- Ultraclean - no additives or surfactants
- 100% integrity tested during manufacture
- Hydrophilic PVDF membrane
- Fully integrity testable in water
- High thermal and hydrolytic stability
- Extremely low protein binding
- Extremely low extractables
- Cleanroom manufactured

Applications

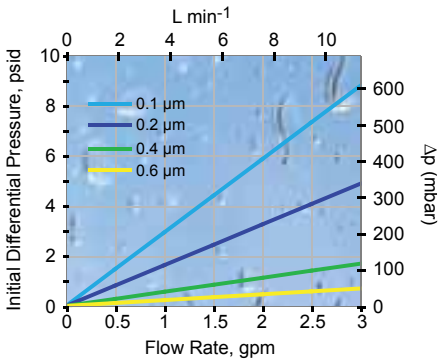
SteriLUX® SFE filters can be used to filter acids, bases, organic solvents, pharmaceutical preparations and active ingredients, parenterals, biopharmaceuticals, vaccines, serum, blood products,ophthalmics, orals, topicals, protein solutions, buffers, salts, diluents, microbiological growth media, cell and tissue culture media and additives, bulk pharmaceutical chemicals, diagnostics, cosmetics and toiletries, solvent/product mixtures, reagents, and water for injection (WFI).

Specifications

Filter Media:
Polyvinylidene fluoride (PVDF) Membrane
Absolute Filtration Ratings:
0.1 µm, 0.2 µm, 0.4 µm, 0.6 µm
Effective Filtration Areas *(all grades):*
2P Model: 1.6 ft^2 (0,15 m^2)
5P Model: 3.3 ft^2 (0,31 m^2)

Bacterial Retention:
ASTM F838-05 Challenge
0.1 µm, 0.2 µm > 10^7 cfu/cm^2
Brevundimonas diminuta
0.1 µm and 0.2 µm meet the FDA definition of a liquid rated sterilizing grade filter.
0.1 µm > 10^5 cfu/cm^2 *Acholeplasma laidlawii*
0.4 µm > 10^7 cfu/cm^2 *Serratia marcescens*
Integrity Testing (VTH, VMH):
Minimum Bubble Point, Water
0.1 µm 70 psi (4,8 bar)
0.2 µm 50 psi (3,4 bar)
0.4 µm 28 psi (1,9 bar)
0.6 µm 14 psi (1,0 bar)

SteriLUX® Water Flow Rates



Steridyne®

Hydrophobic

A hydrophobic PVDF membrane filter for absolute submicron contaminant removal in gases and low surface tension chemicals and solvents

Steridyne® SFE filters are absolute-rated PVDF membrane filters designed to provide absolute bacterial and particulate removal from critical gases and liquids. They are ideal for pharmaceutical gases, fermentor air, sterile venting, and for many low surface tension chemicals and solvents. Manufactured by Meissner's proprietary process, the hydrophobic PVDF membrane in Steridyne® SFE cartridges has high mechanical strength, broad chemical and solvent compatibility, and high thermal stability.

Features

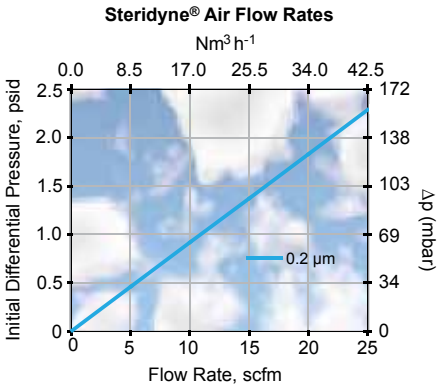
- Absolute-rated 0.2 µm
- Meets ASTM bacterial retention standards
- Inherently hydrophobic PVDF membrane
- High air flow rates
- Virus retentive in gases
- Broad chemical compatibility
- Ultraclean – no additives, surfactants or post treatments
- 100% integrity tested during manufacture
- High thermal and hydrolytic stability
- Cleanroom manufactured

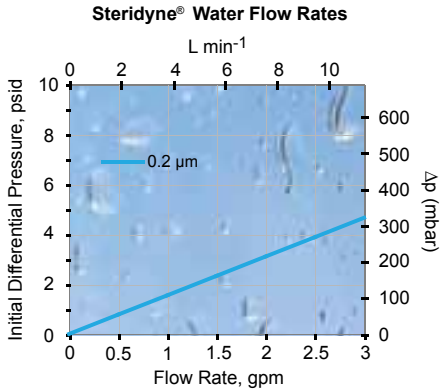
Applications

Steridyne® SFE cartridges are optimized for sterile vent and gas filtration, and can be used to filter acids, bases, organic solvents and solvent-product mixtures in pharmaceutical manufacturing. Steridyne® is ideal for pharmaceutical, biopharmaceutical, chemical, food and beverage, general industrial and laboratory applications.

Specifications

Filter Media:
Polyvinylidene fluoride (PVDF) Membrane
Absolute Filtration Rating: 0.2 µm
Effective Filtration Areas (all grades):
2P Model: 1.6 ft^2 (0,15 m^2)
5P Model: 3.3 ft^2 (0,31 m^2)
Bacterial Retention:
ASTM F838-05 Challenge
0.2 µm > 10^7 cfu/cm^2 *Brevundimonas diminuta*
This meets the FDA definition of a liquid rated sterilizing grade filter.
Integrity Testing (VTV, VMV):
Minimum Bubble Point, 60/40% IPA/water
18 psi (1,2 bar)





STyLUX®

A high performance pleated PES membrane filter offering exceptional flow rates, superior cleanliness and maximum assurance of removing particulate and microorganisms in critical processes

STyLUX® SFE cartridges are absolute-rated PES membrane filters designed to provide greater bacteria and particle removal at high flow rates and extremely low pressure drops. STyLUX® SFE filters contain an asymmetric PES membrane which offers the greatest assurance of filtration performance, stability and service life for controlling contaminants in demanding environments. The highly porous PES membrane is permanently hydrophilic, has exceptional flow rates, and provides excellent compatibility and extremely low extractables in a wide range of fluids and applications.

Features

- Absolute ratings from 0.04 µm to 0.6 µm
- Meets ASTM bacterial retention standards
- Extremely high flow rates at low pressure drops
- Ultraclean — no additives, surfactants, or post-treatments
- 100% integrity tested during manufacture
- Fully integrity testable in water
- Permanently hydrophilic membrane
- High thermal and hydrolytic stability
- Wide chemical compatibility through pH range 1-14
- Highly passive to protein adsorption; low binding
- Reliable integrity under severe process conditions
- Cleanroom manufactured

Applications

STyLUX® SFE filters offer the greatest security for high quality filtration in a wide variety of applications. Typical applications include ultrapure water, acids and bases, etchants, alcohols and aldehydes. STyLUX® SFE filters are designed for removal of particulates, colloids and microorganisms from a broad range of pharmaceutical and biological solutions, immunologicals, virus suspensions, radiodiagnostics, enzymes, ophthalmics, reagents, salt solutions, nutrients, tissue culture media, serum and blood-based products, biologicals and many more.

Specifications

Filter Media:
Polyethersulfone (PES) Membrane
Absolute Filtration Ratings: 0.04 µm, 0.1 µm, 0.2 µm, 0.4 µm, 0.6 µm
Effective Filtration Areas *(all grades):*
2P Model: 1.6 ft^2 (0,15 m^2)
5P Model: 3.3 ft^2 (0,31 m^2)

A technically advanced PES membrane filter designed with a highly asymmetric "prefilter" structure to increase contaminant capacity, extend service life, and keep flow rates high

EverLUX™

Hydrophilic

Bacterial Retention:

ASTM F838-05 Challenge:

0.04 µm, 0.1 µm, 0.2 µm > 10^7 cfu/cm^2

Brevundimonas diminuta

0.04 µm, 0.1 µm, 0.2 µm meet the FDA definition of a sterilizing grade filter.

0.04 µm, SC 0.1 µm > 10^7 cfu/cm^2

Acholeplasma laidlawii

0.1 µm > 10^5 cfu/cm^2

Acholeplasma laidlawii

0.4 µm > 10^7 cfu/cm^2

Serratia marcescens

0.6 µm > 10^7 cfu/cm^2

Saccharomyces cerevisiae

Integrity Testing (ST, SM)**:**

Minimum Bubble Point, Water

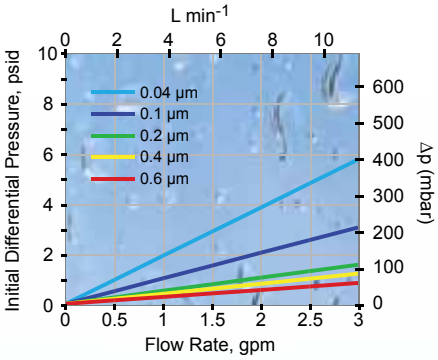
0.04 µm	115 psi (7,9 bar)
0.1 µm	80 psi (5,5 bar)
0.2 µm	44 psi (3,0 bar)
0.4 µm	32 psi (2,2 bar)
0.6 µm	18 psi (1,2 bar)

Integrity Testing (SC)**:**

Minimum Bubble Point, Water

0.1 µm	110 psi (7,6 bar)

STyLUX® Water Flow Rates



The EverLUX™ SFE filter is designed for very high contaminant capacity, extended service life and high flow, with low pressure drop in a wide range of biological fluids. Optimized for sterile filtration, prefiltration and clarification applications, EverLUX™ SFE filters offer exceptional service life and flow when filtering moderate to high contaminant liquids. It provides absolute bacteria retention and low protein binding. EverLUX™ is a highly cost-effective and time saving filter, often reducing the number of filters required and extending the time between change-outs.

Features

- Absolute ratings from 0.2 µm to 0.6 µm
- Meets ASTM bacterial retention standards
- Ultraclean — no additives, surfactants, or post-treatments
- Chemical compatibility across pH 1-14
- Permanently hydrophilic membrane
- 100% integrity tested during manufacture
- Low adsorption; high transmission of proteins, active ingredients and preservatives
- Superior throughput in high contaminant fluids, including growth media, serum and protein-containing solutions
- Cleanroom manufactured

Applications

EverLUX™ filters are ideal for use in a range of low to high contaminant liquids, including blood products, buffers, complex biologicals, serum, cell and tissue culture media, process intermediates, supernatants, vaccines, and ophthalmics.

Specifications

Filter Media*:*

Polyethersulfone (PES) Membrane

Absolute Filtration Ratings:

0.2 µm, 0.4 µm, 0.6 µm

Effective Filtration Areas *(for SMH and SPH grade filters)***:**

2P Model: 1.6 ft^2 (0,15 m^2)

5P Model: 3.3 ft^2 (0,31 m^2)

Effective Filtration Areas *(for STW grade filters)***:**

2P Model: 1.2 ft^2 (0,11 m^2)

5P Model: 2.5 ft^2 (0.23 m^2)

Bacterial Retention:

ASTM F838-05 Challenge:

STW 0.2 µm > 10^7 cfu/cm^2

Brevundimonas diminuta

STW 0.2 µm meets the FDA definition of a sterilizing grade filter.

SMH 0.4 µm > 10^7 cfu/cm^2

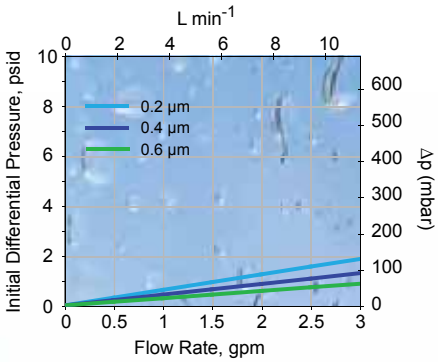
Serratia marcescens

Integrity Testing:

Minimum Bubble Point, Water

0.2 µm	62 psi (4,3 bar)
0.4 µm	40 psi (2,8 bar)
0.6 µm	22 psi (1,5 bar)

EverLUX™ Water Flow Rates



Chemdyne®

Hydrophobic

A polypropylene (PP) membrane filter offering the maximum in security, reliability and economy for the critical control of contamination in solvents, corrosive chemicals and gases

Chemdyne® SFE filters are absolute-rated membrane filters that are constructed of 100% pure PP. Chemdyne® SFE filters contain a PP membrane for maximum chemical compatibility, performance, reliability and economy in controlling contaminants in critical processes. The highly porous PP membrane is naturally hydrophobic, maintains consistent porosity and retention throughout its operational life, provides excellent chemical compatibility and exceptionally low extractable levels in a wide range of fluids and applications.

Features

- Absolute ratings from 0.04 µm to 0.2 µm
- Meets ASTM bacterial retention standards
- Total PP construction
- Ultraclean – no additives or post-treatments
- Inherently hydrophobic membrane
- Wide chemical compatibility and purity
- Extremely low extractable levels
- Cost effective alternative to PTFE membrane filters
- 100% integrity tested during manufacture
- Cleanroom manufactured

Applications

Chemdyne® SFE filters offer excellent security for high quality filtration, chemical compatibility, reliability and performance in a wide variety of applications. Typical applications include acids, bases, alcohols, solvents, etchants, photolithographic solutions, antibiotic/solvent streams, compressed air and gases, and sterile vents/exhausts for autoclaves, lyophilizers, sterilizers, fermentors and similar equipment.

Specifications

Filter Media:

Polypropylene (PP) Membrane

Absolute Filtration Ratings:

0.04 µm, 0.1 µm, 0.2 µm

Effective Filtration Areas *(all grades):*

2P Model: 1.2 ft^2 (0,11 m^2)

5P Model: 2.5 ft^2 (0,23 m^2)

Bacterial Retention:

ASTM F838-05 Challenge

0.1 µm, 0.2 µm > 10^7 cfu/cm^2

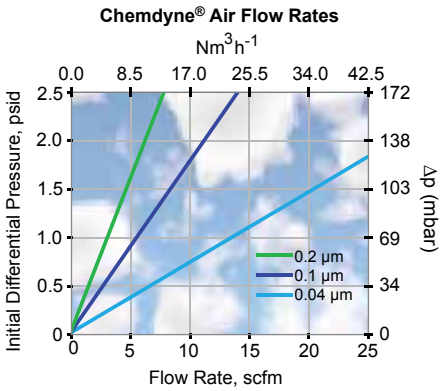
Brevundimonas diminuta

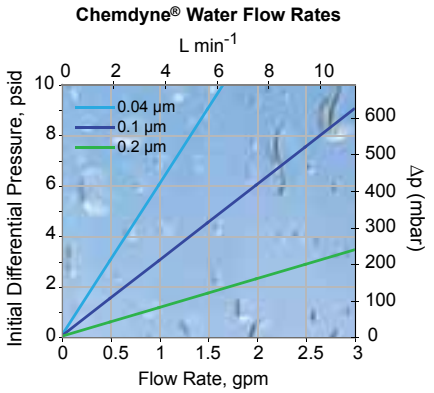
0.1 µm, 0.2 µm meet the FDA definition of a liquid rated sterilizing grade filter.

Integrity Testing (PT, PM):

Minimum Bubble Point, 60/40% IPA/water

0.04 µm	29 psi (2,0 bar)
0.1 µm	24 psi (1,7 bar)
0.2 µm	10 psi (0,7 bar)





Ultradyne®

Hydrophobic

A PTFE membrane filter offering the utmost assurance of chemical resistance, durability and performance under aggressive process conditions

Ultradyne® SFE filters are absolute-rated PTFE membrane filters which offer the greatest assurance of filtration performance and chemical compatibility in severe process conditions. Ultradyne® SFE filters contain a PTFE membrane which provides superior flow rates and long service life. The highly porous PTFE membrane is inherently hydrophobic and offers maximum chemical compatibility and minimal extractables in a wide range of fluids and applications.

Features

- Absolute ratings from 0.05 µm to 5.0 µm
- Meets ASTM bacterial retention standards
- Superior flow rates at low pressure drops
- Ultraclean– no additives or post-treatments
- Inherently hydrophobic membrane
- Wide chemical and solvent compatibility
- Minimal extractable levels
- 100% integrity tested during manufacture
- Cleanroom manufactured

Applications

Ultradyne® SFE filters are inert, chemically pure filters designed for the utmost security in removing contaminants from aggressive solvents, highly corrosive chemicals and gases. Typical applications include acids, bases, alcohols, solvents, esters, ketones, etchants, photolithographic chemicals, compressed air and gases, and sterile vents/exhausts for autoclaves, lyophilizers, sterilizers, fermentors and similar equipment.

Specifications

Filter Media:

Polytetrafluoroethylene (PTFE) Membrane

Absolute Filtration Ratings:

0.05 µm, 0.1 µm, 0.2 µm, 0.4 µm, 1.0 µm, 5.0 µm

Effective Filtration Areas: *(all grades):*

2P Model: 1.2 ft^2 (0,11 m^2)

5P Model: 2.5 ft^2 (0,23 m^2)

Bacterial Retention:

ASTM F838-05 Challenge

0.1 µm, TA 0.2 µm, TT 0.2 µm > 10^7 cfu/cm^2

Brevundimonas diminuta

0.1 µm, TA 0.2 µm, TT 0.2 µm meet the FDA definition of a liquid rated sterilizing grade filter.

0.4 µm > 10^7 cfu/cm^2

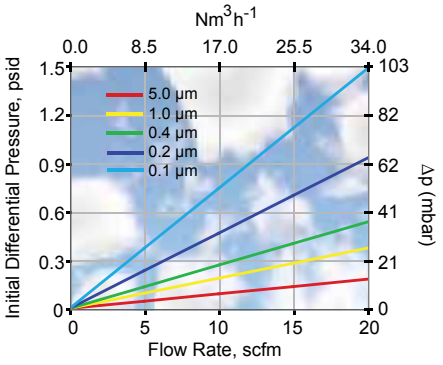
Serratia marcescens

Integrity Testing:

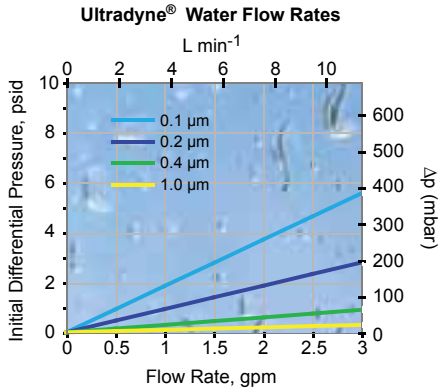
Minimum Bubble Point, 60/40% IPA/Water

0.1 µm	20 psi (1,4 bar)	*TM, TT grade*
0.2 µm	16 psi (1,1 bar)	*TA, TT grade*
0.2 µm	14 psi (1,0 bar)	*TM grade*
0.4 µm	7 psi (0,5 bar)	*TM, TT grade*

Ultradyne® Air Flow Rates



Ultradyne® Water Flow Rates



Vangard®

Microfiber

A high efficiency, long service life filter constructed entirely of polypropylene

Vangard® SFE filters are high efficiency, pleated depth type filters constructed entirely of chemically resistant PP. They are economical, premium quality products that deliver consistently high filtration efficiency, superior flow rates, considerable dirt-holding capacity and exceptionally long service life. The filter's all-PP construction makes Vangard® SFE filters a cost-effective choice for clarification and prefiltration applications.

Features

- Nominal retention ratings from 0.1 µm to 99 µm
- 100% PP construction
- High contaminant capacity
- High flow rate
- Ultraclean - contains no binders, adhesives or surfactants
- Wide chemical compatibility and purity
- Self-bonded filter media, non-fiber releasing
- Cleanroom manufactured

Applications

Vangard® SFE filters are most appropriate for use when high efficiency filtration and economy are crucial. Typical applications include prefiltration and clarification of water, gases, chemicals, solvents, etchants, reagents, photochemicals, coatings, and inks.

Specifications

Filter Media:

Polypropylene (PP) Microfiber

Nominal Retention Ratings:

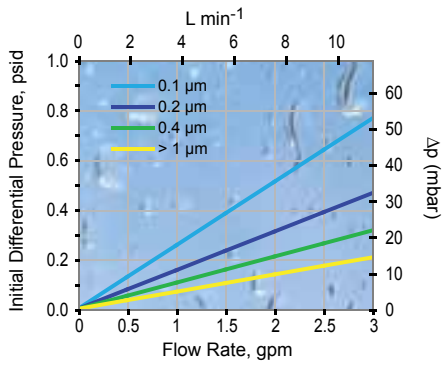
0.1 µm, 0.2 µm, 0.4 µm, 1 µm, 3 µm, 5 µm, 10 µm, 30 µm, 60 µm, 99 µm

Effective Filtration Areas:

2P Model: 1.0 ft^2 (0,09 m^2)

5P Model: 2.0 ft^2 (0,19 m^2)

Vangard® Water Flow Rates



ALpHA®

An advanced all PP filter with absolute ratings and extremely consistent filtration performance

ALpHA® SFE filters are absolute-rated, pleated, depth type filters that are constructed of 100% PP. ALpHA® SFE filters contain a self-bonded microfiber filter medium which is composed of multiple layers of successively finer fibers and smaller pores. This highly porous, tapered structure has a controlled absolute-rated inner layer and several outer prefilter layers which substantially increase dirt-holding capacity. This filter matrix of decreasing pore size and high void volume allows for superior flow rates and high throughputs while achieving submicron retentions, high efficiencies and extraordinary dirt-holding capacity. Its all-PP construction offers excellent chemical compatibility and low extractables in a wide range of fluids and applications.

Features

- Absolute removal ratings from 0.45 µm to 70 µm
- Precise particle retention at rated level
- 100% PP construction
- Tapered pore structure provides longest possible life
- High flow rates
- High dirt-holding capacity
- Ultraclean – contains no binders, adhesives or surfactants
- Wide chemical compatibility and purity
- Self-bonded filter media, non-fiber releasing
- Cleanroom manufactured

Applications

ALpHA® SFE filters have almost unlimited applications. They are most appropriate when high quality filtration and economy are of importance. For selected applications, they are a low cost alternative to membrane filter cartridges. Typical applications include general, fine and ultrafine applications, prefiltration, water, gases, chemicals, solvents, etchants, buffers, reagents, photochemicals, coatings and inks.

Specifications

Filter Media:

Polypropylene (PP) Microfiber

Absolute Retention Ratings:

0.45 µm, 0.6 µm, 0.8 µm, 1.2 µm, 2.4 µm, 5 µm, 7 µm, 10 µm, 20 µm, 30 µm, 40 µm, 70 µm

Effective Filtration Areas:

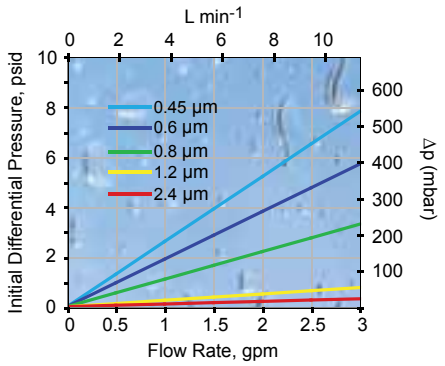
2P Model: 1.0 ft^2 (0,09 m^2)

5P Model: 2.0 ft^2 (0,19 m^2)

Pore Size (µm)	Removal Rating in Microns (µm) at % Efficiency		
	100%	99%	90%
0.45	0.45	0.40	< 0.30
0.6	0.6	0.56	0.38
0.8	0.8	0.72	0.50
1.2	1.2	1.1	0.7
2.4	2.4	2.3	2.0
5	5	4.5	3.0
7	7	6.5	5.0
10	10	9.5	7.5
20	20	19.0	12.0
30	30	26.0	16.0
40	40	35.0	28.0

The removal ratings given in this chart represent actual dynamic measurements obtained from controlled laboratory tests using latex spheres in DI water at a flow rate of 2 gpm/10-inch element. The particle retention efficiencies were determined using a particle counter that accurately measured particles down to 0.3 µm.

ALpHA® Water Flow Rates



DeltaMax™

An absolute-rated PP depth filter

DeltaMax™ SFE filters are PP depth filters with absolute removal ratings from 0.5 µm to 70 µm. The filter's unique spiral construction creates a gradient pore structure that maximizes service life and flow rates. DeltaMax™ is compatible with a wide array of chemicals and cleaning agents. It is free of surfactants and other additives. It withstands multiple *in situ* steam cycles (SIP), resists contaminant unloading even at high differential pressure.

Features

- Absolute ratings from 0.5 µm to 70 µm
- Gradient pore structure
- Non-fiber releasing filter
- High dirt-holding capacity for long service life
- Resists contaminant unloading even at high differential pressures

Applications

DeltaMax™ filters are ideal for clarification, polishing, bioburden reduction and prefiltration in pharmaceutical and biological product and process liquids, cosmetics and personal care product liquids, microelectronic chemicals, solvents, UPW and CMP slurries. They are also optimized for wine, beer, mineral water, soft drinks and other beverages as well as water purification systems.

Specifications

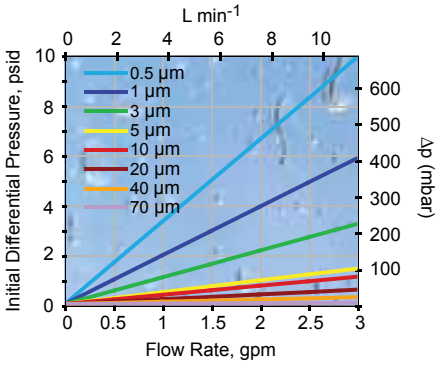
Filter Media:

Polypropylene (PP) microfiber depth media

Absolute Particulate Ratings:

0.5 µm, 1 µm, 3 µm, 5 µm, 10 µm, 20 µm, 40 µm, 70 µm

DeltaMax™ Water Flow Rates



Protec®

A glass microfiber prefilter, with optional PVDF membrane, optimized to protect downstream sterile filters

The Protec® SFE is a glass microfiber prefilter optimized to protect downstream sterile filters. The Protec® RF filter contains a single layer of 0.5 µm-rated borosilicate glass fiber media. The Protec® RM filter is available 0.2 µm, 0.3 µm, and 0.5 µm-rated and combines an outer layer of borosilicate glass fiber media with an inner layer of Meissner's proprietary hydrophilic PVDF membrane. Protec® SFE filters provide consistent submicron contaminant removal, high dirt-holding capacity and high flow rates, while removing colloids, aggregated and non-product proteins, lipids and other particles. Protec® SFE filters effectively protect downstream membrane filters and equipment.

Features

- RF version is 0.5 µm absolute-rated
- RM version is available in absolute-rated 0.2 µm to 0.5 µm
- All-polypropylene support materials
- High flow rates and excellent filtration economics
- RM version combines the retention performance of a PVDF membrane with the high adsorption and contaminant-holding capacity of glass fiber media
- Cleanroom manufactured

Typical Applications

Protec® filters are ideal for clarification, prefiltration and bioburden reduction in many applications, including biological liquids, vaccines, tissue and cell culture media, protein solutions, fermentation media and feeds, cell removal from fermentation broths, pre-column chromatography, and biopharmaceuticals.

Specifications

Filter Media:

- Borosilicate Glass Microfiber (RF grade – single layer)
- Borosilicate Glass Microfiber with PVDF membrane (RM grade – double layer)

Absolute Particulate Ratings:

RF: 0.5 µm

RM: 0.2 µm, 0.3 µm, 0.5 µm

Effective Filtration Areas:

RF grade filters:

2P Model: 1 ft^2 (0,09 m^2)

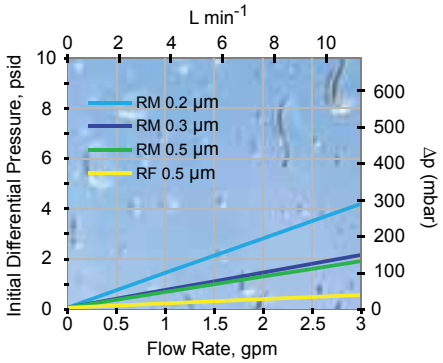
5P Model: 2 ft^2 (0,19 m^2)

RM grade filters:

2P Model: 0.9 ft^2 (0,08 m^2)

5P Model: 1.7 ft^2 (0,16 m^2)

Protec® Water Flow Rates



Small Flow Element Ordering Guide

Example:

L	SM	0.2	—	5	6	R	S
Model	**Filter**	**Grade**	**Retention Rating (µm)**	**Filter Length/ (area) nominal**	**Adapter Selection**	**Reinforcement Ring Option**	**O-ring Material**
	SteriLUX®						
		VMH	0.1, 0.2, 0.4, 0.6	2 = 2.5 in (0,09 m^2)	P = Standard Internal 116 O-ring	(Blank) = Standard: no reinforcement ring	B = Buna
		VTH	0.1, 0.2, 0.4, 0.6	5 = 5.0 in (0,19 m^2)			E = EPR
		VPH	0.1, 0.2, 0.4		2 = 222 O-rings (for autoclave/SIP applications, select "R" under "Reinforcement Ring Option")		S = Silicone
	STyLUX®						T = Teflon® over Silicone
		SM	0.04, 0.1, 0.2, 0.4, 0.6			R = Reinforcement ring: required only for the -222 and -226 adapter when autoclaving or steam sterilizing.	V = Viton®
		ST	0.04, 0.1, 0.2, 0.4, 0.6				X = Teflon® over Viton®
		SC	0.1				
		SP	0.04, 0.1, 0.2, 0.4				
	EverLUX™						
		SMH	0.2, 0.4, 0.6				
		STW	0.2				
		SPH	0.1, 0.2, 0.4				
	Steridyne®						
		VMV	0.2		6 = 226 O-ring style locking adapter (for autoclave/SIP applications, select "R" under "Reinforcement Ring Option")		
		VTV	0.2				
	Chemdyne®						
		PM	0.04, 0.1, 0.2				
		PT	0.04, 0.1, 0.2				
	Ultradyne®						
		TM	0.05, 0.1, 0.2, 0.4, 1.0, 5.0		SK = Skirt-flange adapter (no reinforcement or O-ring options available)		
		TT	0.2				
		TA	0.2				
	Protec®						
		RM	0.2, 0.3, 0.5				
		RF	0.5				
	ALpHA®						
		MF	0.45, 0.6, 0.8, 1.2, 2.4 5, 7, 10, 20, 30, 40, 70				
	Vangard®						
		MN	0.1, 0.2, 0.4, 1, 3 5, 10, 30, 60, 99				
	DeltaMax™						
		DM	0.5, 1, 3, 5, 10, 20, 40, 70				

MEISSNER FILTRATION PRODUCTS, INC.

Membrane Grade Descriptions

M = (VMH, SM, SMH, VMV, PM, TA)
This sterilizing grade filter is absolute, microbially rated and 100% integrity tested and flushed with DI water during manufacture. It is suited for critical applications when regulatory documentation requirements are minimal. A Certificate of Conformance is provided on a lot basis.

T = (VTH, ST, STW, VTV, PT, TT)
This absolute, sterilizing grade filter meets full traceability requirements for the pharmaceutical industry. It is 100% integrity tested and flushed with DI water during manufacture. Each T-grade filter is shipped with a Certificate of Quality stating exact quality control criteria and test performance results. This is a validatable product to meet the stringent requirements of the pharmaceutical industry.

P = (VPH, SP, SPH)
This is an absolute, particulate rated filter. It is 100% integrity tested and DI flushed during manufacture.

TM = This absolute, particulate rated filter is 100% integrity tested and flushed with DI water during manufacture. It is suited for high purity filtration of liquids, or for economical sterilization of air/gas when regulatory requirements are minimal. A Certificate of Conformance is provided on a lot basis.

SC0.1 = This is a sterilizing grade filter designed specifically for the 100% removal of Mycoplasma. It is 100% integrity tested and DI flushed during manufacture and it has the added benefit of certification that meets the critical needs of the pharmaceutical, biotechnology and related industries. Each SC0.1 filter comes with a Certificate of Quality that gives precise information on the quality, integrity and acceptance criteria of the filter.

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