

# Ultradyne®

Hydrophobic PTFE Membrane Filter



# Ultradyne® Filter Cartridge

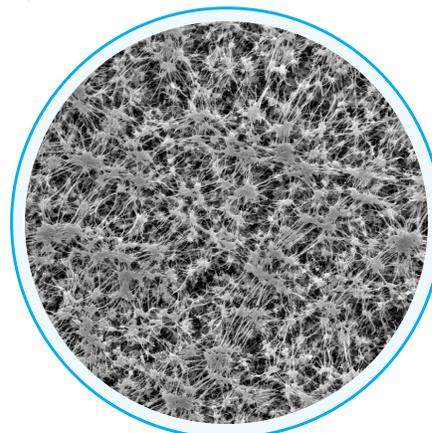


The Ultradyne® filter cartridge is an absolute rated, pleated PTFE membrane cartridge which offers the greatest assurance of filtration performance and chemical compatibility in severe process conditions. Available in absolute retention ratings of 0.05 µm, 0.1 µm, 0.2 µm, 0.4 µm, 1.0 µm and 5.0 µm, the Ultradyne® filter is designed for the utmost security in aggressive solvents, highly corrosive chemicals and gases.

Constructed entirely of PTFE and polypropylene materials, the Ultradyne® cartridge is an inert, chemically pure filter. Its filtration media is a highly porous PTFE membrane, which provides high flow rates and long service life. A unique, state-of-the-art process thermally bonds the filter and polypropylene support components to the cartridge end caps. This results in an integral filter cartridge which provides maximum chemical compatibility with minimal extractables.

## Features and Benefits

- Inert PTFE and polypropylene components provide extremely wide chemical compatibility, and permit use in a broad range of fluids and applications
- Absolute ratings of 0.05, 0.1, 0.2, 0.4, 1.0 and 5.0 micron deliver precise particle retention at rated level
- Highly porous PTFE membrane assures high flow rates, long service life and maximum chemical resistance with minimum extractables
- Inherently hydrophobic membrane provides a natural barrier to water without the use of additives or surface modifying agents which can leach or wash out
- Rugged thermal bonded construction ensures reliable integrity under severe process conditions and withstands multiple sterilizations
- Contains no binders or adhesives for wide solvent compatibility with extremely low extractables
- Fully integrity testable for assured product integrity and effectiveness in operation
- 100% integrity testing by factory guarantees product reliability and consistency
- Biologically inert and non-toxic - Ultradyne® meets FDA requirements for food contact use and is biosafe in compliance with USP Class VI biological reactivity tests



Ultradyne® SEM

## Typical Applications

Ultradyne® meets the critical demand for contamination control in the chemical, microelectronics, aerospace, biologicals, pharmaceuticals, food and beverage, and other industries. The Ultradyne® cartridge is designed for the removal of particulates, colloids and microorganisms from aggressive solvents, highly corrosive chemicals and gases. It is ideal for bulk and point-of-use filtration.

Typical chemicals include:

- Highly concentrated acids
- Bases
- Alcohols
- Chlorinated and fluorinated solvents
- Esters
- Ketones
- Photoresists
- Etchants
- Photolithographic solutions

For aqueous solutions, the Ultradyne® filter must be pre-wet by immersion in a suitable low surface tension fluid.

The inherently hydrophobic Ultradyne® filter is ideal for gas filtration applications that include:

- Compressed air
- Fermentation air
- Pressurized gases
- Tank venting

# Product Specifications

## Materials of Construction

Filter Media: Polytetrafluoroethylene (PTFE)  
 Upstream Support: Polypropylene  
 Downstream Support: Polypropylene  
 Core/Outer Guard: Polypropylene  
 End Caps: Polypropylene  
 Sealing Method: Thermal Bonding  
 O-ring/Gasket Seal: Buna, EPR, polyethylene, silicone, Teflon® over silicone, Teflon® over Viton®

All materials of construction listed above meet FDA standards for food contact per 21 CFR 177.

Filters comply with European Commission Regulation No. 10/2011. Ultradyne® filters meet the requirements as specified in the current USP Class VI plastics, pyrogen and cytotoxicity tests. No binders, adhesives or surfactants are used in the construction of Ultradyne® filters. Ultradyne® filters are non-fiber-releasing as defined in 21 CFR 210.3(b)(6) and 211.72.

## Filtration Ratings

Filter Grade	Absolute Ratings (µm)
TM	0.05, 0.1, 0.2, 0.4, 1.0, 5.0
TA/TT	0.2
TD	0.1, 0.2

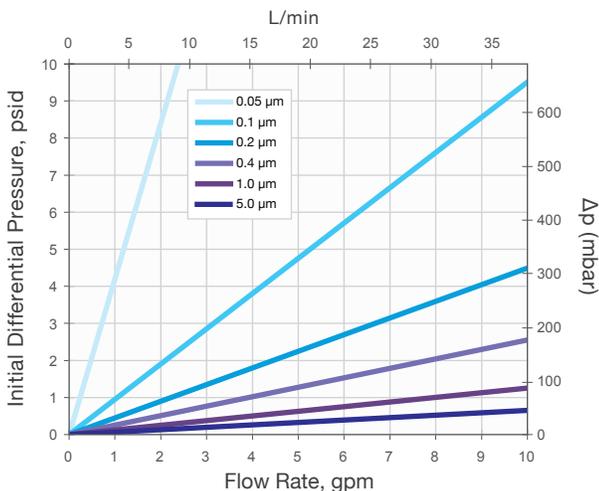
## Integrity Testing

Minimum Bubble Point, 60% IPA

Filter Grade	Minimum Bubble Point (psi / bar)
TM	
0.1 µm	20 psi (1,4 bar)
0.2 µm	14 psi (1,0 bar)
0.4 µm	7 psi (0,5 bar)
1.0 µm	4 psi (0,3 bar)

TA/TT	
0.2 µm	16 psi (1,1 bar)

Typical water flow rates per 10" cartridge



## Bacterial Retention

ASTM F838-05 Challenge  
 TA 0.2 µm and TT 0.2 µm > 10<sup>7</sup> cfu/cm<sup>2</sup>  
*Brevundimonas diminuta*  
 (TA 0.2 µm and TT 0.2 µm meet the FDA definition of a liquid rated sterilizing grade filter.)  
 TM 0.4 µm > 10<sup>7</sup> cfu/cm<sup>2</sup> *Serratia marcescens*

## Sterilization

Steam-in-place (SIP):  
 saturated steam @ 121-135 °C, 30-60 minutes  
 [15-30 psi (1-2 bar), 30-60 minutes]

Autoclave: 121-125 °C, 30-60 minutes

Ultradyne® cartridges are capable of repeated sterilization cycles without loss of integrity. For applications requiring autoclave/SIP, a stainless steel reinforcement ring must be ordered. See "Reinforcement Ring Option" within the ordering information.

## Maximum Operating Temperatures and Pressures

Δp 80 psi @ 32 °F to 100 °F (Δp 5,5 bar @ 0 °C to 38 °C)

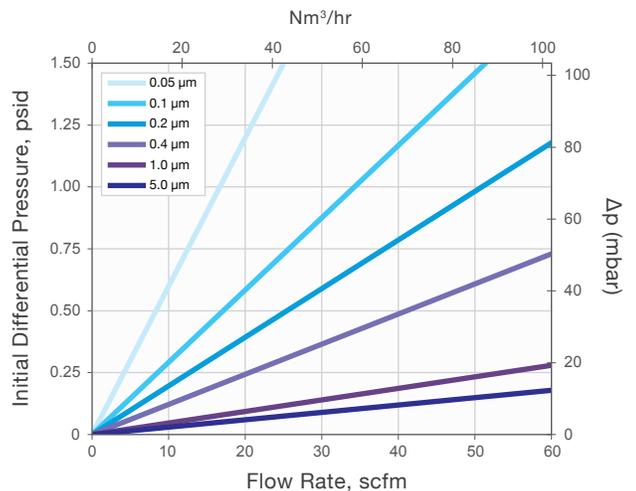
Δp 60 psi @ 150 °F (Δp 4,1 bar @ 66 °C)

Δp 30 psi @ 180 °F (Δp 2,1 bar @ 82 °C)

## Cartridge Dimensions (nominal)

Diameter: 2.75" (7 cm)  
 Length: 10", 20", 30", 40"  
 (25 cm, 50 cm, 75 cm, 100 cm)

Typical air flow rates per 10" cartridge



# End Cap Configurations



**-226 O-ring**  
External -226 O-rings with locking tabs; open end for C6 and F6 SOE configurations



**-222 O-ring**  
External -222 O-rings; open end for C2 and F2 SOE configurations



**-226 nO-Ring®**  
External -226 nO-Ring® with locking tabs; open end for C5 and F5 SOE configurations



**-222 nO-Ring®**  
External -222 nO-Ring®, open end for C1 and F1 SOE configurations



**Flat Gasket**  
Flat Gasket; open end for GS and GL DOE configurations



**Internal O-ring**  
Internal O-ring; open end for DN and DA DOE or RN and RA SOE configurations



**Button Cap**  
Button Cap; closed end for C1, C2, C5 and C6 SOE configurations



**Alignment Fin**  
Alignment Fin; closed end for F1, F2, F5 and F6 SOE configurations



**Recessed Cap**  
Recessed Cap; closed end for RN and RA SOE configurations

DOE = Double Open End  
SOE = Single Open End

## Ordering Information

Filter Grade	Absolute Rating (µm)	Cartridge Length	End Cap Configuration	Reinforcement Ring Option	Seal Material (O-ring or Gasket)
<b>TM</b>	<b>0.2</b>	<b>3</b>	<b>F2</b>	<b>R</b>	<b>S</b>
<b>TM</b>	0.05, 0.1, 0.2, 0.4, 1.0, 5.0	1 = 10" (25 cm) 2 = 20" (50 cm) 3 = 30" (75 cm) 4 = 40" (100 cm)	<b>GS</b> = DOE; flat gaskets (9.75", 19.5", 29.25", 39" length filters) <b>GL</b> = DOE; flat gaskets (20", 30", 40" length filters) <b>C1</b> = SOE; -222 nO-Ring®, button cap end <b>C2</b> = SOE; -222 O-rings, button cap end <b>F1</b> = SOE; -222 nO-Ring®, fin end <b>F2</b> = SOE; -222 O-rings, fin end <b>C5</b> = SOE; -226 nO-Ring®, button cap end <b>C6</b> = SOE; -226 O-rings, button cap end <b>F5</b> = SOE; -226 nO-Ring®, fin end <b>F6</b> = SOE; -226 O-rings, fin end <b>DN</b> = DOE; internal -120 O-rings <b>RN</b> = SOE; internal -120 O-ring, recessed cap end <b>DA</b> = DOE; internal -213 O-rings <b>RA</b> = SOE; internal -213 O-ring, recessed cap end	<b>(Blank)</b> = Standard - no reinforcement ring  <b>R</b> = Reinforcement ring; required for autoclave/SIP applications	<b>O-ring Seal</b> <b>B</b> = Buna <b>E</b> = EPR <b>S</b> = Silicone <b>T</b> = Teflon® over silicone <b>V</b> = Viton® <b>X</b> = Teflon® over Viton®  <b>Gasket Seal</b> <b>B</b> = Buna <b>E</b> = EPR <b>P</b> = Polyethylene <b>S</b> = Silicone <b>T</b> = Teflon® <b>V</b> = Viton®

### Filter Grade Descriptions

**TM** = This absolute, particulate rated filter is 100% integrity tested 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 available on a lot basis.

**TT** = This absolute, microbially rated, sterilizing grade filter meets full traceability requirements for the pharmaceutical industry. (It qualifies as a sterilizing grade filter per ASTM F838 liquid bacterial challenge.) It is 100% integrity tested during manufacture. Each TT 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.

**TA** = This sterilizing grade filter is absolute, microbially rated and 100% integrity tested during manufacture. (It qualifies as a sterilizing grade filter per ASTM F838 liquid bacterial challenge.) It is suited for critical applications when regulatory documentation requirements are minimal. A Certificate of Conformance is available on a lot basis.

**TD** = This absolute, particulate rated, double layer filter is 100% integrity tested during manufacture. It is suited for applications when regulatory documentation requirements are minimal. A Certificate of Conformance is available on a lot basis.

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