Industrial filtration

Experience high flow capability in a compact design

High Flow filter systems feature filters from 70 micron all the way down to 0.5 micron, making them ideal for those who need filtration efficiency in a sustainable, ergonomic design.

thermo scientific

Meeting your needs with high performance media in an innovative design

High flow capability

The Thermo Scientific™ High Flow Filters system is designed to accommodate flow rates of up to 500 gpm (113 m^3/hr) in a single 60 inch (1,524 mm) length filter cartridge.

The result? Fewer filter cartridges to maintain your process flow requirements. In fact, High Flow filter systems require as few as one-tenth the number of filter cartridges as conventional 2.5 inch (63.5 mm) outer diameter (OD) filter systems where flow rates are 200 gpm (45 m^3/hr) or higher (see Figure 1 on page 5).

Thermo Scientific™ High Flow Filter System single round filter system range

Compound radial pleat design

Lower capital investment costs and compact design

Fewer required filter cartridges combined with an outside-to-inside flow path reduces the size of housing required for your application. The Thermo Scientific™ High Flow Filter Housing takes up as little as one-half the size of conventional 2.5 inch (63.5 mm) OD filter cartridge housings for a given flow rate.

'Twist-to-lock' cartridge seating mechanism

Ease of use and ergonomic design

This High Flow filter system is designed with ease-of-use in mind. From a user-friendly, ergonomically designed handle that makes cartridge installation and removal easier without the use of special tools or other hardware, to a 'twist-to-lock' cartridge seating mechanism that provides a positive seal, the High Flow filter system facilitates easy operation and maintenance of your filters.

High Flow filter system features and benefits

Features	Benefits
High flow capability per cartridge vs. conventional 2.5 inch (63.5 mm) OD cartridges	Fewer cartridges required, resulting in: • Reduced cartridge handling and disposal • Reduced filter change-out time • Less individual cartridge seal points, reducing chance of fluid bypass
Compound radial pleat design using blown microfiber polypropylene media	• High filter loading capacity • Reproducible filter effluent quality throughout life of filter • Broad chemical compatibility
Compact system design	• Smaller housing minimizes capital expense requirements • Reduces housing diameter • 10 inch (254 mm) version is ideal for lower process flows, batch applications, and modular systems
Easy to use	• No special tools or hardware required for filter change-out • 'Twist-to-lock' cartridge seating mechanism provides positive seal • Ergonomic designed handle facilitates cartridge installation and removal
Approved for food contact use	Certain High Flow filter cartridges are compliant with: • US FDA 21 CFR • EU food contact regulation (EC) 1935/2004 • China Food Safety Law • Japan MHLW — Food Sanitation Act • Other food contact regulations Contact your Thermo Fisher Scientific representative for detailed declaration of compliance information for food contact applications

Applications

Industrial: Municipal water, RO prefiltration, reclaimed water, metal working coolants, nozzle protection, boiler condensate, process water

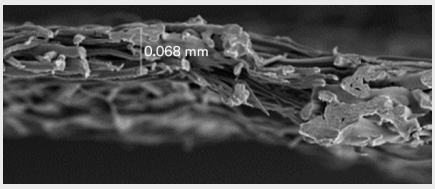
Chemical: Quench water, aqueous salt solutions, final products

Petrochemicals: Waterflooding, produced water, enhanced oil recovery, completion fluids, amine sweetening, final products

Electronics: RO prefiltration, process cooling water

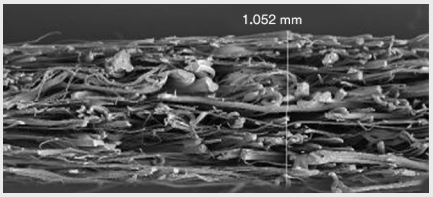
Food and beverage and bottled water: Process and blending water, D.E. trap filtration, barrel char removal, spring site filtration, membrane protection

Available in two media options depending upon your contaminant concerns



Thermo Scientific™ High Flow HF Filter Cartridges

High Flow HF filter cartridges offer great particulate removal and surface filtration for a variety of industrial applications.



Thermo Scientific™ High Flow HFM Filter Cartridges

Featuring thick media, these High Flow HFM filter cartridges are designed to filter deformables and organics. They also help prevent premature blinding of the filter's outer surface, promoting fuller utilization of the media for an optimal combination of particle removal efficiency and contaminant holding capability.

High Flow filter cartridge 0.5 µm provides these additional benefits

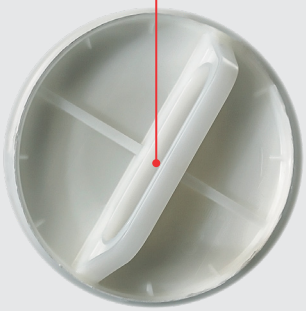
- Microbial reduction for yeast and cryptosporidium
- Up to 30% total cost of filtration reduction
- Greater efficiency gained at high capacity with the tighter micron rating

These benefits mean the High Flow filter cartridge 0.5 µm can provide excellent downstream membrane filter protection.

Designed to help you increase efficiency

Ease of use

An ergonomically designed handle facilitates fast and easy insertion and removal without the use of special tools. Cartridges are simply inserted over a built-in guide tube. Fewer cartridges mean filter change-outs are quicker and easier.



Polypropylene structure

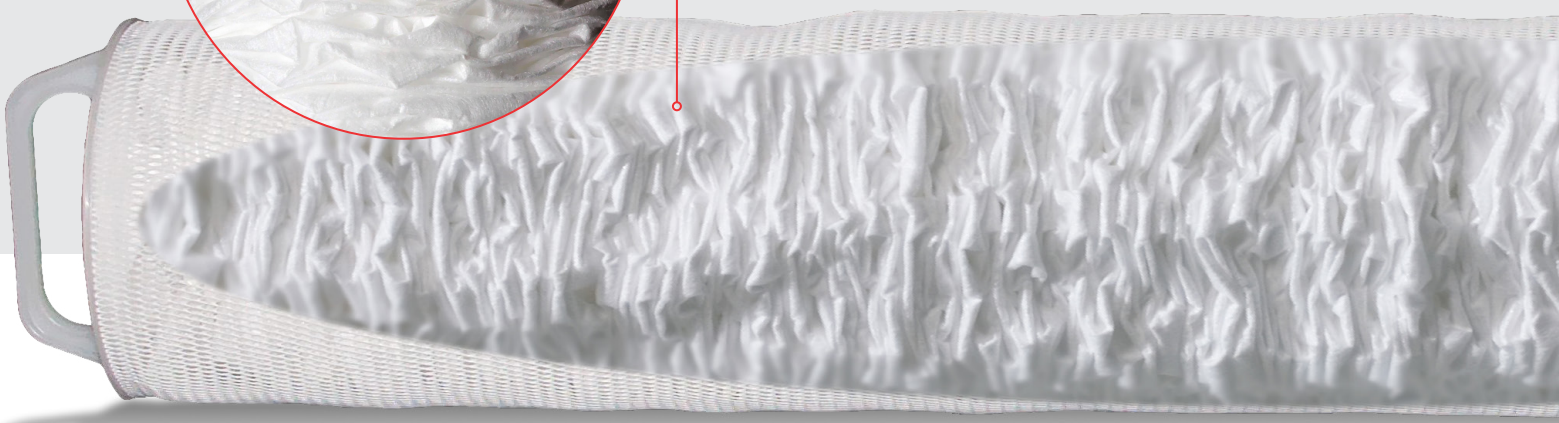
Provides a wide range of compatibility with various fluids.

Compound radial pleat pattern

Maximizes the usable surface area per cartridge.

High flow

3 inch (76 mm) core permits up to 500 gpm (113 m^3/hr) through a single 60 inch (1,524 mm) length cartridge. Seating mechanism uses a ‘twist to lock’ design to provide a positive seal reducing the possibility of bypass.



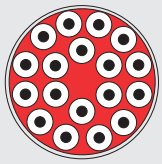
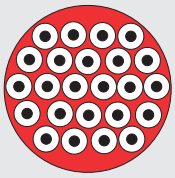
High Flow filter system vs. conventional filter system

The High Flow filter system family also has a supporting family of filter housings that meet most standard applications with the option to engineer custom solutions depending on the requirements. Thermo Fisher offers housings with 1, 3, 5, and 7 round variations for the 40 inch (1,016 mm) and the 60 inch (1,524 mm) versions and a 1 round for our 10 inch (254 mm) filters in 316 stainless for food and beverage applications.

We can provide housings to meet global applications and specifications and is supported by a global engineering team. For more information, on High Flow filter housing options, see our brochure or contact your local Thermo Fisher sales representative or distributor.

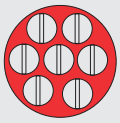
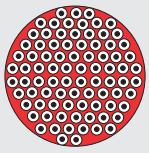
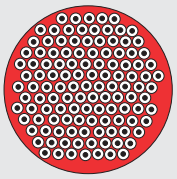
Figure 1. Comparison of required 40 inch (1,016 mm) length Thermo Scientific™ High Flow Filter Cartridge and their housing diameter

350 gpm (80m³/hr)

High Flow filtration system	2.5 in (63.5 mm) pleated cartridges	2.5 in (63.5 mm) depth filters
		
1 cartridge in a housing with a 8.6 in (218 mm) diameter	18 cartridges in a housing with a 14 in (356 mm) diameter	24 cartridges in a housing with a 16 in (406 mm) diameter

90% fewer cartridges

2000 gpm (454m³/hr)

High Flow filtration system	2.5 in (63.5 mm) pleated cartridges	2.5 in (63.5 mm) depth filters
		
7 cartridges in a housing with a 24 in (610 mm) diameter	85 cartridges in a housing with a 30 in (762 mm) diameter	120 cartridges in a housing with a 36 in (914 mm) diameter

Up to 33-50% reduction in housing size

Thermo Scientific™ High Flow Filter housing specifications	
Materials of construction	**Wetted:** 316 (castings and forgings) and 316L (sheet plate and bar). **Non-wetted:** typically 304 and 304L (legs and mountings). Other grades of steel are also possible.
ASME standard	Section VIII Div2 U-stamp
Australian standard	AS 1210 pressure vessel
Pressure equipment directive 2014/68/EU	Article 4.3 'Sound Engineering Practice'
ATEX directive 2014/34/EU	II 2 GD c IIC/IIIC
Food contact compliance	316 and 316L stainless steel construction (wetted parts). Seal options available and compliance varies based on use application; contact your Thermo Fisher representative.
Maximum recommended flow rate for a single cartridge	10 in (254 mm): 85 gpm (19.3 m^3/hr) 40 in (1,016 mm): 350 gpm (80 m^3/hr) 60 in (1,524 mm): 500 gpm (113 m^3/hr)

Specifications

Construction materials

Filter media: Each grade of High Flow filter cartridges is manufactured from food contact compliant meltblown polypropylene microfiber media, providing high particle removal efficiency with broad chemical compatibility. No adhesives, binders or silicone are used in the manufacturing process. All support layers are constructed with polypropylene.

O-rings: O-rings are available in a variety of materials to suit your application including the standard nitrile, ethylene propylene rubber (EPR), silicone and fluorocarbon.

Construction	
Filter micron rating	**HF:** 0.5, 1, 2, 5, 10, 15, 25, 40, 70 µm Absolute **HFM:** 5, 10, 20, 40 µm Absolute, 5 µm Nominal*
Filter media, center core, end caps, outer sleeve	Polypropylene
Sealing O-ring options	Nitrile, Silicone, Fluorocarbon and EPR
O-ring size	338 (3.0 in/76.2 mm)
Cartridge dimensions	
Inside diameter (nominal)	3 in (76.2 mm)
Outside diameter (nominal)	6.5 in (165 mm)
Cartridge length (nominal)	10 in (254 mm), 40 in (1,016 mm), 60 in (1,524 mm)
Operating conditions	
Maximum recommended flow rate in water @ 68°F (20°C)	85 gpm (19.3 m^3/hr), 350 gpm (80 m^3/hr), 500 gpm (113 m^3/hr)
Maximum continuous operating temperature	160°F (71°C)
Maximum hot water sanitization temperature	185°F (85°C)
Maximum forward differential pressure	50 psid @ 68°F (3.4 bar @ 20°C)
Recommended change-out differential pressure	35 psid @ 68°F (2.4 bar @ 20°C)
Clean pressure drop	See figure 2, figure 3 and figure 4

*Also rated at 70 µm Absolute

Microbial control

Excellent microbial reduction

Grade	Microorganism used for challenge	Challenge level	Organisms in filtrate	LRV
0.5 µm	Saccharomyces cerevisae (ATCC-36026)**	1.3 x 107 CFU/cm^2 of media	0 CFU	>8.1
1 µm			20 CFU	6.8
0.5 µm	Microspheres as a surrogate for Cryptosporidium oocyst***	3,286 microspheres/100 ml	9 microspheres/100 ml	2.6

**Challenge conditions used: Microbial concentration 3x105 – 5x105 organisms/ml, flow rate 0.25 gpm/ft^2 (10 L/min/m^2)
***Challenge conditions used: Microspheres, flow rate 55 gpm / HF10 filter, terminal differential pressure 35 psid

Fluid compatibility

Chemical	Temperature
Acetic acid 20%	159.8°F (71°C)
Alkanolamines	140°F (60°C)
Ammonium hydroxide	159.8°F (71°C)
Bleach 5.5%	120.2°F (49°C)
Ethylene glycol	159.8°F (71°C)

Chemical	Temperature
Hydrogen peroxide	100.4°F (38°C)
Methyl ethyl ketone	69.8°F (21°C)
Mineral oil	
Nitric acid 20%	120.2°F (49°C)
Potassium hydroxide	140°F (60°C)

Chemical	Temperature
Sodium carbonate	159.8°F (71°C)
Sodium hydroxide 70%	
Sulphuric acid 20%	
Sulphuric acid 70%	
Urea	

NOTE: The thermal and chemical resistance data presented in this brochure is for guidance only. Factors such as duration of exposure, O-ring material, fluid concentration and temperature should also be considered. Thermal and chemical resistance should also be considered when choosing all materials exposed to fluids.

Typical cartridge flow rates

These data plots are provided for reference only and these graphs represent the pressure drop of the filters only.

Figure 2. Thermo Scientific™ High Flow Filters 10 inch (254 mm) flow rate vs differential pressure

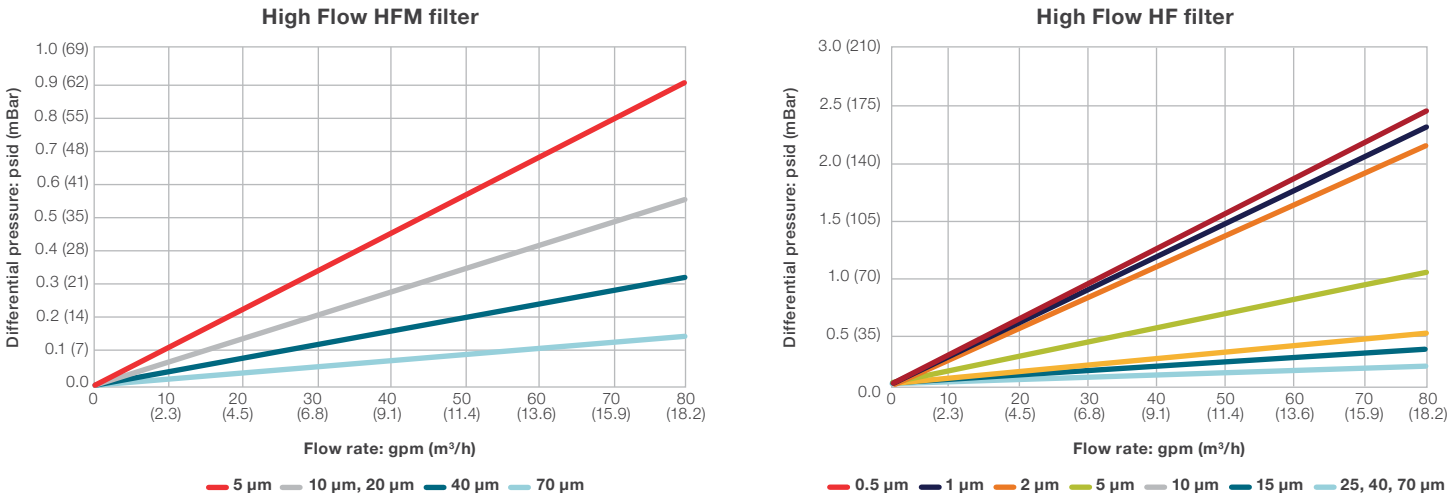


Figure 3. Thermo Scientific™ High Flow Filters 40 inch (1,016 mm) flow rate vs differential pressure

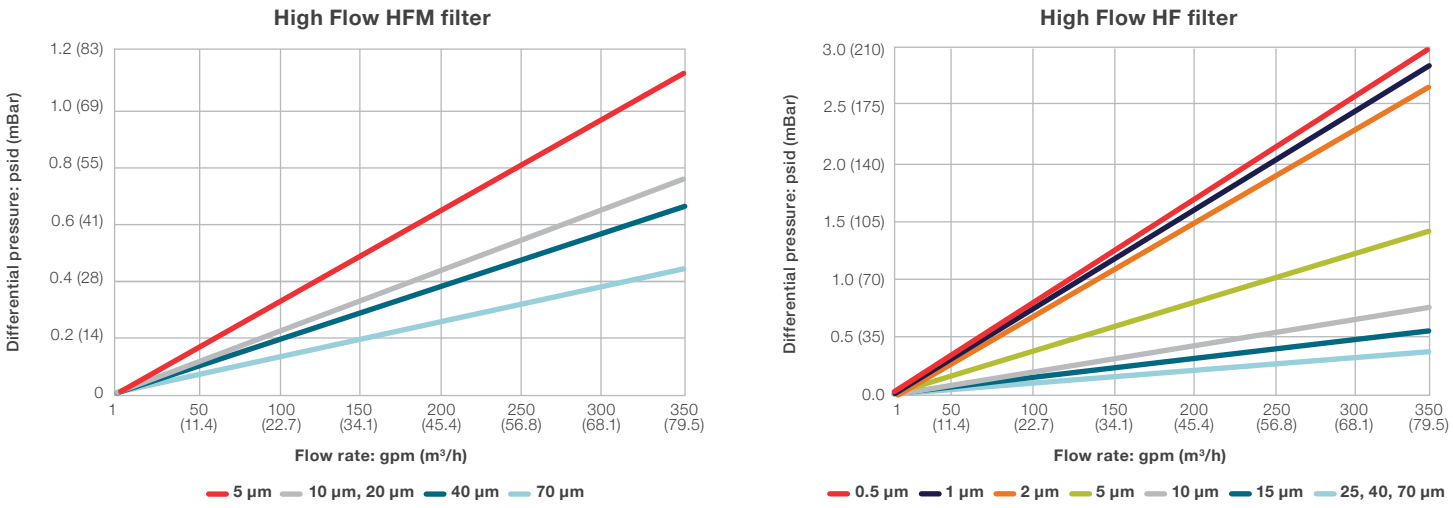
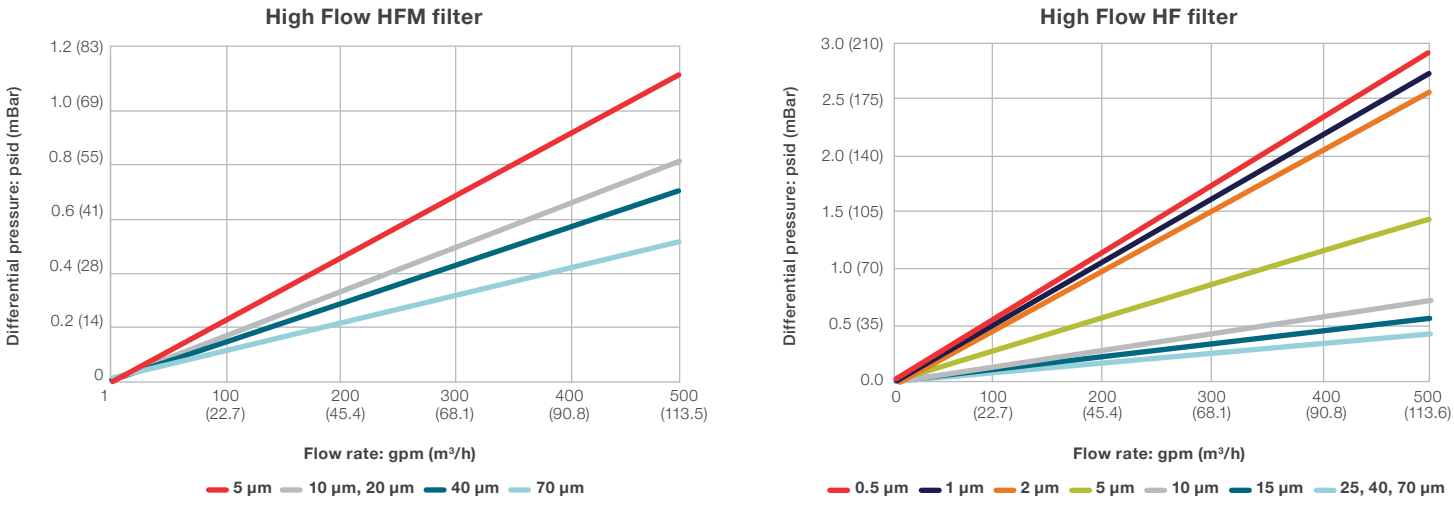


Figure 4. Thermo Scientific™ High Flow Filters 60 inch (1,524 mm) flow rate vs differential pressure



Thermo Scientific™ High Flow Filter Cartridge ordering guide

Model	Cartridge length	Material	Absolute micron rating	O-ring material	Packaging
HF	10 – 10 in (254 mm) 40 – 40 in (1,016 mm) 60 – 60 in (1,524 mm)	PP – Polypropylene	0005 – 0.5 µm 001 – 1 µm 002 – 2 µm 005 – 5 µm 010 – 10 µm 015 – 15 µm 025 – 25 µm 040 – 40 µm 070 – 70 µm	A – Silicone B – Fluorocarbon[1] C – EPR D – Nitrile	01 – 1 Pack
HFM	10 – 10 in (254 mm) 40 – 40 in (1,016 mm) 60 – 60 in (1,524 mm)	PP – Polypropylene	A05 – 5 µm A10 – 10 µm A20 – 20 µm A40 – 40 µm N05 – 5 µm (Nominal)[2]	A – Silicone C – EPR D – Nitrile	01 – 1 Pack

SAP ID	Catalog number	Description
7100376967	4661701 HF0005	0.5 µm HF 47 mm disc pack
7100376968	4661701 HFMA40	40 µm HFM 47 mm disc pack
7100216692	4606601	High Flow Disc kit — 12 grades[3]

1. Fluorocarbon O-rings not available in the High Flow filters 0.5 µm or the High Flow HFM filters
2. Also rated at 70 µm Absolute
3. Kit excludes 0.5 µm HF and 40 µm HFM discs

Application engineering

The cornerstone for Thermo Fisher Scientific's philosophy is service to customers, not only in product quality and prompt delivery, but also in validation, application support, and the sharing of scientific information.

By using Thermo Scientific products, customers have access to Thermo Fisher Application Engineering support, a global team of market-focused scientists and engineers who excel in supporting collaborative efforts between customers and us.

Our Application Engineers can work with you from start to finish to suggest the most effective and economical filters to achieve the clearest results.

Certain High Flow filter cartridges have been tested and certified against NSF/ANSI/CAN 61. Contact your Thermo Fisher representative for additional information. For full product listing visit www.wqa.org

Certified to NSF/ANSI 419
NSF/ANSI 419 certification applicable for High Flow filters 0.5 µm only

Intended Use: High Flow filters are intended for use in industrial, chemical, electronics and food and beverage filtration applications of aqueous and non-aqueous fluids in accordance with the product instructions, specifications and where materials of construction are compatible.

Certain High Flow filters are compliant for use in Food and Beverage applications. For specific details regarding use or limitations for food contact applications please contact your Thermo Fisher representative for more information.

Since there are many factors that can affect a product's use, the customer and user remain responsible for determining whether the Thermo Scientific product is suitable and appropriate for the user's specific application, including user conducting an appropriate risk assessment and evaluating the Thermo Scientific product in user's application.

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