

3M™ High Flow HFR Series Filters

3M™ High Flow HFR Series Filters are high flow capacity, high efficiency, inside to outside flow direction, liquid filtration cartridges designed for the applications listed below with large flow requirements.

3M High Flow HFR Series Filters fit into the standard Pall Ultipleat® High Flow HFU Filter Housings.

The large diameter, pleated depth media filter design permits flow rates of up to 100 m³/hr (440 gpm) in a single 60" length filter. This results in significantly fewer required filters for a given flow as compared to standard 2.5" diameter filters.

The 3M-developed polypropylene microfiber forms the basis of the filtration media utilized in the 3M High Flow HFR Series Filter. The manufacturing processes allow for tightly controlled specifications resulting in a filter media with absolute rated particle retention characteristics.

The 3M High Flow HFR Series Filter helps to remove particles and other contaminants from water, compatible industrial chemicals, and liquid food & beverage fluids with absolute retention rating.

The 3M High Flow HFR Series Microfiber Filter Media is optimized for use in process water applications containing organic contaminants, as well as particulate. The lofted media design helps prevent premature blinding of the filter outer surface, promoting fuller utilization of the media, resulting in an optimum combination of particle removal efficiency and contaminant holding capability.

The 3M High Flow HFR Series Filter has been evaluated and certified for compliance to EU Food Contact Regulation 1935/2004, and is intended for Food and Beverage applications in the European Union. Use in any other applications, such as pharmaceutical applications, have not been evaluated by 3M and may lead to an unsafe condition.



Features & Benefits

Faster Flow Rates Compared to Conventional 2.5" Filters

- Fewer filters required at a given flow rate
- Reduced filter handling
- Fewer filter seal points reducing chance of fluid bypass

3M Lofted Microfiber Filtration Media

- High particle removal efficiencies throughout filter life
- High contaminant capacity
- Extended service life, especially for fluids with a mixture of particles and deformables

Advanced Pleat Technology

- Increased usable filtration area
- Helps to limit blinding effect of the filter media

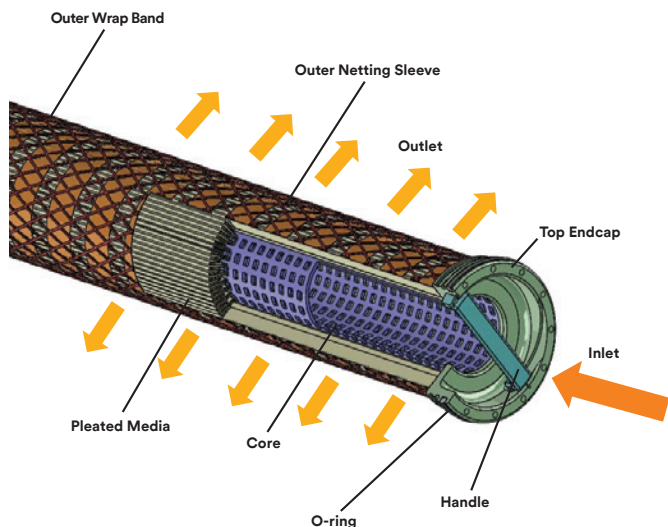
EU Food Contact and FDA Compliant Materials

- All materials of construction used in the 3M High Flow HFR Series Filter are listed for food contact in the EU according to Regulation 1935/2004 and in the US under FDA 21 CFR Parts 174-186.

Applications

- Pre-RO water
- Condensing water filtration
- Process waters
- Injection and produced waters
- Ground/reclaimed/waste waters
- Refining (amine sweetening, final product)
- Coolants
- Utility water
- Part washing (OEM)
- Beverage grade water and fluids

Figure 1. Filter Design



Filter Construction

3M High Flow HFR Series Filters, constructed of polypropylene microfiber media, provide high particle removal efficiency. The filter media is constructed from continuous microfibers that are precisely controlled to provide a uniform matrix and consistent effluent quality. The filter incorporates a polypropylene support upstream of the media to provide optimum flow characteristics and long service life.

The filter components are thermally bonded to provide a structurally integral filter without the use of resins, binders or adhesives. Available in six distinct micron ratings and three integral lengths of 20, 40 and 60 inches to fit common filter housing designs, 3M High Flow HFR Series Filters are ideal for a wide variety of applications.

Table 1. 3M™ High Flow HFR Series Filter Ratings

Grade	Absolute Rating (µm)*
A05	5
A10	10
A20	20
A40	40
A70	70**
A100	100

* Tested at ambient temperature.

** 70 µm HFR is also rated at 5 µm Nominal

Absolute Retention Ratings

Consistent and reproducible contaminant reduction can best be provided by the use of absolute-rated filters. The 3M™ High Flow HFR Series Filter absolute ratings are based upon the particle size (x) providing a Beta Ratio (β_x) = 1000. At this Beta Ratio, the removal efficiency is equal to 99.9%. The 3M High Flow HFR Series Filter ratings are provided in Table 1.

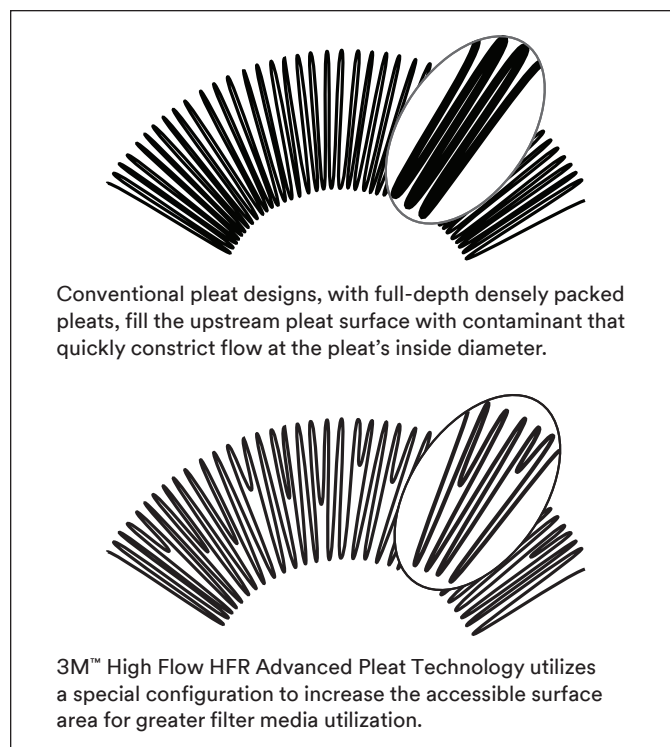
Care should be taken when comparing absolute rated filters with nominally rated filters, as nominally rated filters have no industry standard in terms of retention.

Advanced Pleat Technology (APT)

The service life of a pleated filter is often dictated by the accessible surface area. Conventional pleated filters may offer a large gross surface area, but when the media is packed too tightly into the filter, only part of the surface area is usable. This can result in both flow restrictions and limited contaminant holding capacity.

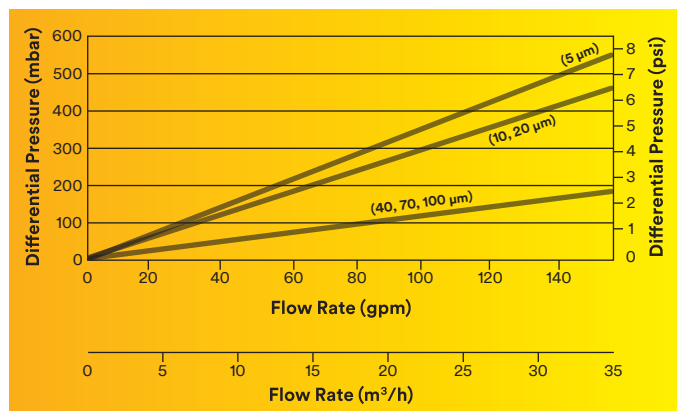
The 3M High Flow HFR Series Filter features Advanced Pleat Technology (APT), a staggered pleat arrangement, that results in more open space between the pleats. This design increases the usable filtration area and helps to limit blinding effect of the filter media.

Figure 2. Conventional Pleat Design vs. Advanced Pleat Technology

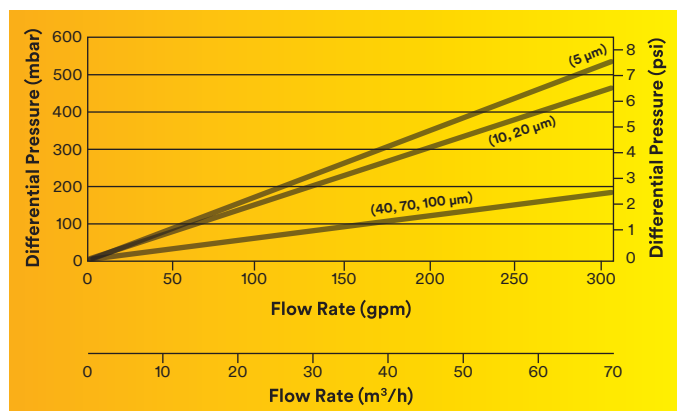


3M™ High Flow HFR Series Filter Flow Rates

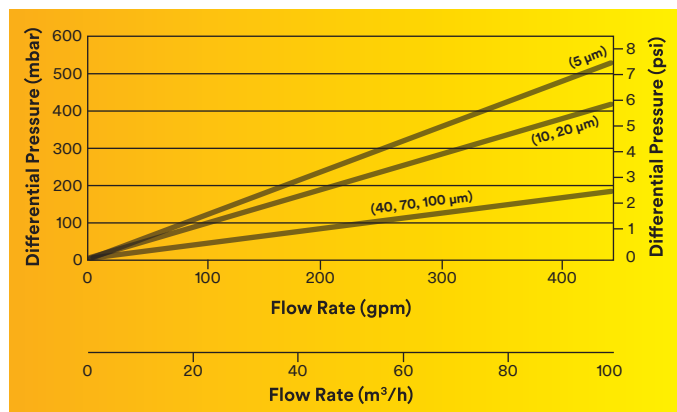
Graph 1. 20 Inch Cartridge



Graph 2. 40 Inch Cartridge



Graph 3. 60 Inch Cartridge



Material of Construction	
Filter Media, Support Materials, Core and End Caps	Polypropylene
Outer Sleeve	Polyethylene
Outer Wrap Band	Polyethylene and Polypropylene
Handle	Polyphenylene ether and Polystyrene blend with glass fiber
O-ring	Nitrile, Silicone or EPDM
Operating Conditions	
Flow Direction	Inside-outside flow path
Maximum Flow Rate	100 m³/h (440 gpm) – 60 in. 70 m³/h (310 gpm) – 40 in. 35 m³/h (150 gpm) – 20 in.
Maximum Operating Temperature	80 °C (175 °F)
Maximum Forward Differential Pressure	3.5 bar @ 20 °C (50 psid @ 68 °F) 1.5 bar @ 70 °C (20 psid @ 160 °F) 1 bar @ 80 °C (15 psid @ 175 °F)
Recommended Change-out Differential Pressure	2.5 bar @ 20 °C (35 psid @ 68 °F)
Maximum Hot Water Sanitation Temperature	85 °C (185 °F)
Nominal Cartridge Dimensions	
Outside Diameter	160 mm (6.3 in.)
Cartridge Length	1524 mm (60 in.) 1016 mm (40 in.) 508 mm (20 in.)

Regulatory

All materials of construction are listed for food contact in the EU according to Regulation 1935/2004 and in the US under US FDA 21 CFR Parts 174–186.

Chemical Compatibility

The 3M™ High Flow HFR Series Filter is primarily composed of polypropylene and polyethylene materials of construction, which offer broad chemical compatibility. Note that compatibility is always a function of time, operating temperature and chemical concentration. Consult 3M Separation and Filtration Sciences Division or your local technical representative for more information.

3M™ High Flow HFR Series Filters Ordering Guide

Filter Designation	Cartridge Length	Material (Media)	Absolute Removal Rating	O-Ring
HFR	20 – 20" 40 – 40" 60 – 60"	PP - Polypropylene	A05 – 5 µm A10 – 10 µm A20 – 20 µm A40 – 40 µm A70 – 70 µm A100 – 100 µm	A – Silicone C – EPDM D – Nitrile

PLEASE NOTE: The Ordering Guide above is for reference only. Not all combinations are available. Please consult with your 3M Representative to determine the appropriate part number for your application.

Technical Information
The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.
Product Selection and Use
Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.
Warranty, Limited Remedy, and Disclaimer
Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.
Limitation of Liability
Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Your local distributor:



3M Separation and Purification Sciences Division

3M United Kingdom PLC
3M Centre, Cain Road
Bracknell RG12 8HT
Berkshire
+44(0) 845 6025 237

3M Ireland Ltd
The Iveagh Building
The Park, Carrickmines
Dublin 18
+353 (01) 280 3555

3M is a trademark of 3M Company.
All other trademarks are the property of their respective owners.
©2022 3M Company. All rights reserved. Please recycle.
70201600007