

## Betafine™ DP Series

Pleated Polypropylene Filters



### Pleated Media for Increased Capacity & Long Service Life

Betafine™ DP series pleated polypropylene filters are available with absolute ratings from 0.2 to 70 microns. The all polypropylene filter is used extensively on corrosive and non-corrosive process fluids where broad chemical compatibility is required.

The vast surface area of the pleated filter matrix provides increased flow, high contaminant loading capacity and low initial pressure drop. This construction permits the use of smaller housings and reduced capital expenditure. Betafine DP series filter cartridges are available in lengths up to 40" with a wide variety of end modifications to fit most filter housing designs.

#### Filter Capsules

Betafine DP series filter capsules are designed for critical, small volume filter applications in the coatings, fine chemicals, pharmaceuticals and microelectronics markets. They contain pleated, absolute-rated, polypropylene filter media providing excellent retention of particles at fast flow rates.

#### Performance

Betafine DP series filter cartridges are ideally suited for high flow, low viscosity fluids.

### Applications

**Betafine™ DP Series filters offer superior chemical resistance and durability in demanding process applications.**

Coatings	Maintaining high quality in feed streams and intermediates.
Electronics	RO/DI prefiltration, electroplating baths, process/rinse water, solvent and specialty coatings.
Food & Beverage	Potable water, process and blending water, and diatomaceous earth trap filtration in food and beverage applications.
Pharmaceutical	Prefiltration, final filtration of process water, air and gas prefiltration, chemical intermediates, bulk pharmaceutical chemicals and solvents.
Industrial Process	Filtration of intermediates, fine chemicals and photographic chemicals, reagent grade chemicals, high purity chemicals, oil and gas processing, secondary water filtration and process gases.

### Features & Benefits

Precision Engineered, Absolute Rated, Pleated Filter

- Consistent, repeatable filtration, improving effluent quality
- Help provide consistent performance

Pleated Media for Greater Surface Area

- Longer service life compared to non-pleated media
- Less down time due to fewer filter change-outs
- Lower total filtration operating costs

High Flow Rates with Lower Pressure Drops

- Exceptional throughput, reduced processing time and reduced processing costs

Thermally Bonded, 100% Polypropylene Construction

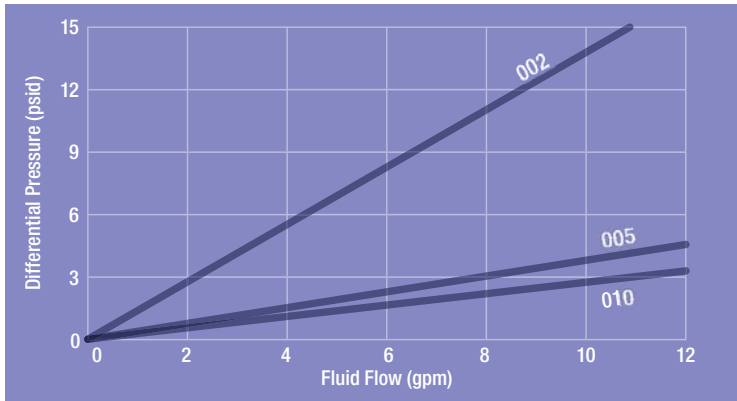
- Broad chemical and thermal compatibility
- No media migration

FDA, CFR 21 Listed Materials of Construction

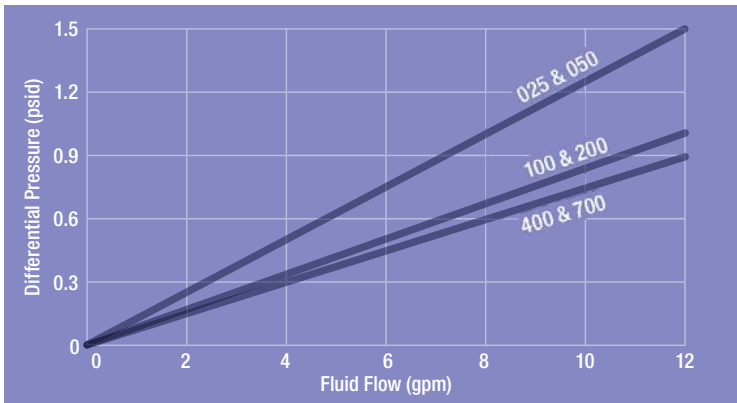
- Suitable for a broad range of applications, including food, beverage and pharmaceutical applications

Filter Capsules Offer

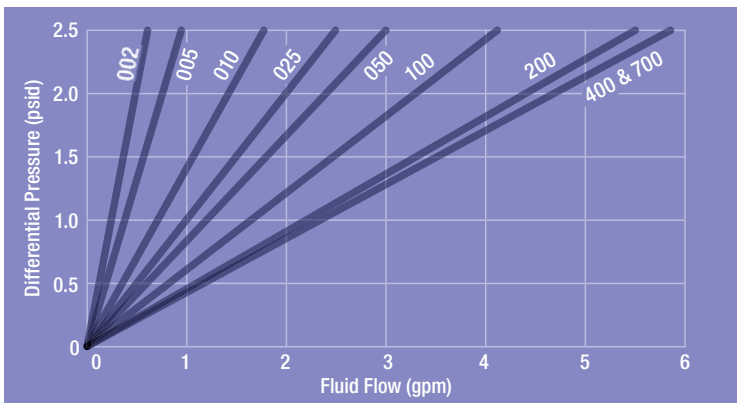
- Sanitary vent and drain valves for ease of use
- Compact design with a variety of end connections



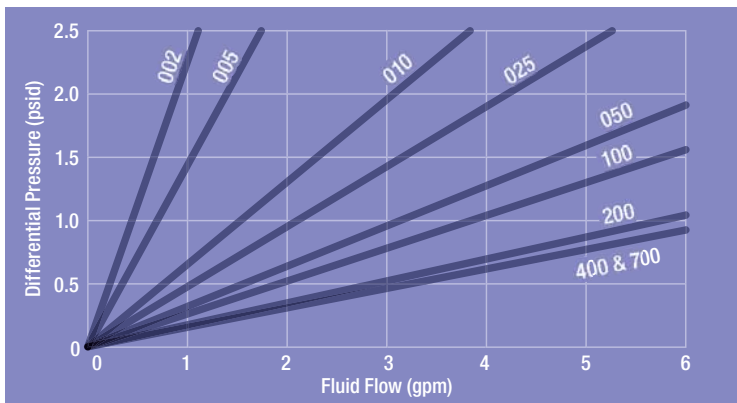
Graph 1. Typical Flow Rates for Grades 002, 005 & 010 Betafine™ DP Series 10" Filter Cartridges



Graph 2. Typical Flow Rates for Grades 025, 050, 100, 200, 400 & 700 Betafine™ DP Series 10" Filter Cartridges



Graph 3. Water Flow Rates for 2.5" Betafine™ DP Series Filter Capsules with 1.5" Sanitary Flanges @ 20 °C



Graph 4. Water Flow Rates for 5" Betafine™ DP Series Filter Capsules with 1.5" Sanitary Flanges @ 20 °C

### Flow Rates

The Betafine DP series filter cartridge construction is optimized to obtain the highest flow rates while maintaining the defined particle reduction efficiencies. The flow rates shown in Graphs 1 and 2 are for 10" cartridges. Graphs 3 and 4 show typical water flow rates for Betafine™ DP series filter capsules with 1.5" sanitary flange connections. Other end connections may affect maximum flow rates, see Table 1 below.

**Table 1. Betafine™ DP Series Filter Capsules Maximum Recommended Flow Rate By End Connection**

End Connection	Maximum Recommended Flow Rate (gpm)	Housing Pressure Loss (psid)*
0.5" Sanitary Flange	6.0	1.0
0.375" FNPT	6.0	1.0
0.5" Hose Barb	3.0	1.5
0.25" MNPT	1.5	2.4
Tapered Hose Barb	0.5	2.2

\* At maximum recommended flow rate

### Betafine™ DP Series Filter Reduction Ratings

Consistent filtration performance, throughout the life of the filter, is the key in determining reduction efficiency. Absolute ratings for Betafine DP series filters are determined using a filter performance test developed by 3M Purification, an adaptation of the general procedures outlined in ASTM STP 975. 3M Purification defines absolute ratings as the particle size (x) providing a Beta Ratio ( $\beta_x$ ) = 1000 as measured over the life of the filter. At this Beta Ratio, the reduction efficiency is equal to 99.9%.

**Table 2. Betafine™ DP Series Filters Representative Reduction Ratings**

Betafine DP Series Filter Grade	Reduction Rating ( $\mu\text{m}$ )	
	Absolute*	Nominal
002	0.2	—
005	0.5	—
010	1	0.2
025	2.5	0.45
050	5	1
100	10	3
200	20	5
400	40	10
700	70	25

\* Absolute Reduction Rating ( $\mu\text{m}$ ) Beta 1000



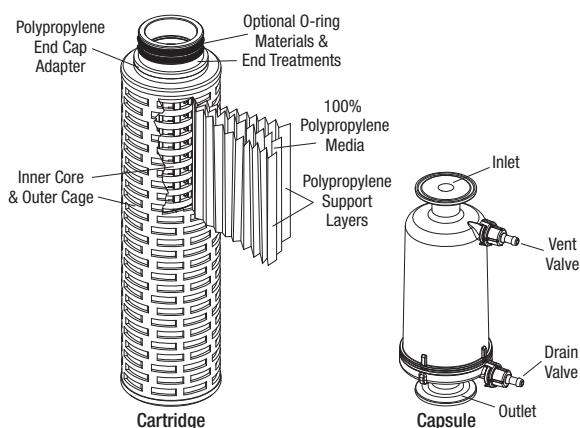
Betafine™ DP Series filters are available in 3M Purification CTG-Klean® packs, a convenient, self-contained filter pack system designed to reduce change-out and clean-up time, and to eliminate operator exposure to chemicals and solvents.

# Operating Parameters & Specifications

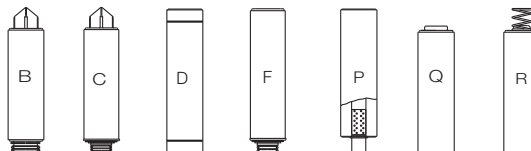
Cartridges									Capsules		
Filter Rating	0.2 - 70 µm									0.2 – 70 µm	
Dimensions											
Nominal Length (see ordering guide)	9.75"	10"	19.5"	20"	29.25"	30"	39"	40"	2.5"	5"	
- With End Connection A	N/A									5"	7.5"
- With End Connection B										5.5"	8"
- With End Connection C										5"	7.5"
- With End Connection D										5"	7.5"
- With End Connection E										5.25"	7.75"
Diameter, Outer (nominal)	2.63" (66.80 mm)									3"	
Diameter, Inner (nominal)	1.09" (27.69 mm)									N/A	
Width (to vent)	N/A									2.75" (69.85mm)	
Materials of Construction											
Filter Media	Polypropylene									Polypropylene	
Polypropylene											
Support Layers											
Inner Core & Outer Cage (cartridge) or Capsule Body											
End Cap Adapters & Adapters											
Flat Gasket	Standard: Ethylene Propylene (EPR) Optional: Silicone, Fluorocarbon, Nitrile & Polyethylene									N/A	
O-rings	Standard: Silicone Optional: Fluorocarbon, Ethylene Propylene (EPR), Nitrile & FEP/PFA-encapsulated Fluorocarbon									Silicone, Fluorocarbon & Ethylene Propylene (EPR)	
Filtration Surface Area	N/A									1.0 ft <sup>2</sup> (929 cm <sup>2</sup> )	2.0 ft <sup>2</sup> (1,858 cm <sup>2</sup> )
Operating Conditions											
Maximum Operating Pressure	N/A									75 psig	
Maximum Differential Pressure	80 psid @ 70 °F (5.5 bar @ 21 °C) 550 kPa									60 psid @ 104 °F (4.1 bar @ 40 °C) 410 kPa	
	60 psid @ 104 °F (4.1 bar @ 40 °C) 410 kPa										
	50 psid @ 150 °F (3.4 bar @ 66 °C) 340 kPa										
	35 psid @ 175 °F (2.4 bar @ 80 °C)										
Recommended Change-out Differential Pressure	35 psid (2.4 bar) @ 77 °F (25 °C) 240 kPa									35 psid (2.4 bar) @ 104 °F (40 °C) 240 kPa	
Maximum Operating Temperature	175 °F (80 °C)									104 °F (40 °C) Do not in-situ steam or autoclave	

## Materials of Construction

Betafine™ DP series filter cartridges are constructed from 100% polypropylene and pleated for increased surface area. The migration-free media is supported both upstream and downstream by polypropylene support materials. To provide a structurally integral cartridge, the cartridge end cap adapters are thermally bonded to the inner core and outer cage as well as the pleated edge of the media and support materials. Multiple cartridge lengths, of various end cap adapters, are produced using the same thermal bonding technique. This eliminates the use of adhesives and cartridge housing adapters to provide users with a cost-effective alternative without housing change-out.



# Betafine™ DP Series Ordering Guide



## Cartridges

Cartridge Code	Nominal Length Code	Filter Media Code	Grade Code & Rating	End Modification Code	O-ring Material Code
DP	*09 9.75"	PP — Polypropylene	002 (0.2 µm)	<b>B</b> — Bayonet Lock Single Open End (SOE) (226 O-ring & Spear)  <b>C</b> — SOE Push-in Type (222 O-ring & Spear)  <b>D</b> — Double Open End (DOE)  <b>F</b> — SOE Push-in Type (222 O-ring & End Cap Adapter)  <b>P</b> — DOE (w/ Polypropylene Core Extender)  <b>Q</b> — SOE (End Cap Adapter w/o Spring)**  <b>R</b> — SOE (End Cap Adapter w Spring)	<b>A</b> — Silicone <b>B</b> — Fluorocarbon <b>C</b> — EPR <b>D</b> — Nitrile <b>G</b> — Polyethylene <b>H</b> — Clear Silicone <b>K</b> — FEP/PFA-encapsulated Fluorocarbon <b>L</b> — FEP/PFA-encapsulated Silicone
	10 10"		005 (0.5 µm)		
	*19 19.5"		010 (1 µm)		
	20 20"		025 (2.5 µm)		
	*29 29.25"		050 (5 µm)		
	30 30"		100 (10 µm)		
	*39 39"		200 (20 µm)		
	40 40"		400 (40 µm) 700 (70 µm)		

\* Available in P & D end modifications only.

\*\* Can be used as a replacement for cartridge with "R" end modification.

## Capsules

Capsule Code	Grade Code & Rating	Configuration Code	Nominal Length Code	End Connection Code	Vent O-ring Material Code	Packaging Code
DP	002 (0.2 µm)	C — Capsule	01 2.5"	<b>A</b> — 1.5" Sanitary Flange <b>B</b> — 0.5" (14 mm) hose barb <b>C</b> — 0.25" MNPT <b>D</b> — 0.375" FNPT <b>E</b> — 0.25"-0.3125"-0.375" Tapered Hose Barb	<b>A</b> — Silicone <b>B</b> — Fluorocarbon <b>C</b> — EPR	<b>01</b> — Single Pack <b>02</b> — 3 Pack <b>03</b> — 20 Pack
	005 (0.5 µm)		02 5"			
	010 (1 µm)					
	025 (2.5 µm)					
	050 (5 µm)					
	100 (10 µm)					
	200 (20 µm)					
	400 (40 µm) 700 (70 µm)					

### Important Notice

The information described in this literature is accurate to the best of our knowledge. A variety of factors, however, can affect the performance of the Product(s) in a particular application, some of which are uniquely within your knowledge and control. INFORMATION IS SUPPLIED UPON THE CONDITION THAT THE PERSONS RECEIVING THE SAME WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR USE. IN NO EVENT WILL 3M PURIFICATION BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON INFORMATION.

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