

Betafine™ PP & PG Series

All Polypropylene Filter Cartridges

Betafine™ PP & PG series filter cartridges are specifically engineered to achieve high throughputs for longer filtration life. Extensive testing has verified cartridge performance, subsequent filter protection and compatibility with solvents, acids and bases. All polypropylene components comply with the Food and Drug Administration's (FDA) Code of Federal Regulations (CFR), Title 21 parts 170-199 for contact with food. Betafine PP series filter cartridges are available with a stainless steel thermal reinforcing ring for applications where high temperature sterilization is required. Betafine PG series filter cartridges DO NOT incorporate a thermal reinforcing ring. Therefore, high temperature sterilization procedures are not recommended.

Efficiency

Modified Oklahoma State University performance tests have been conducted to verify cartridge performance. The Betafine PP & PG series filter cartridge exhibits retention of > 99.99% at each grade's absolute rating at flow rates not exceeding four gallons per minute per 10" element.

Water Flow

Betafine PP and PG series filter cartridges exhibit excellent water flow rates depicted in Graph 1 on the following page.

Features & Benefits

Pleated media for greater surface area

- Longer service life compared to non-pleated media
- Less down time due to fewer filter change-outs
- Helps reduce operating costs

High flow rates with lower pressure drops

- Exceptional throughput, reduced processing time and reduced processing costs

Polypropylene cartridge components Free of Adhesives

- Very low extractable levels for optimum filtrate purity
- Broad chemical compatibility for most aggressive process applications
- Thermally bonded end modifications of various styles allow for use in non-3M housings without the use of cartridge adapters
- Durable construction provides long life under severe process conditions

FDA, CFR 21 Listed materials of construction

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



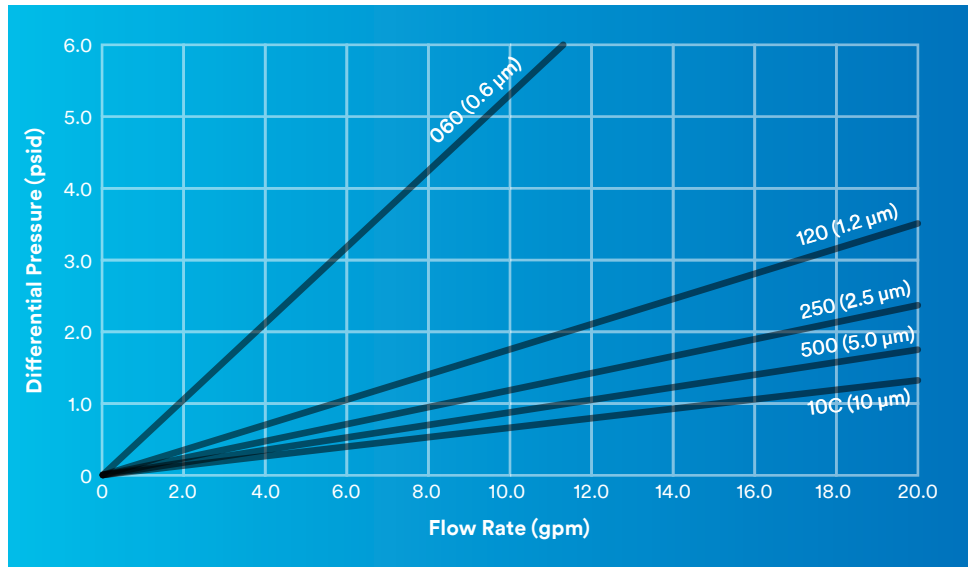
Applications

Betafine™ PP and PG series filter cartridges are ideal for a wide array of applications. Contact 3M Purification Inc. or your local distributor for assistance with your specific applications.

- **Chemical Processing**
High purity chemicals, solvents and reagent
- **Cosmetics**
Raw material clarification, final product clarification
- **Electronics Manufacturing**
Pre-reverse osmosis water filtration, acids, etchants, photoresists and strippers
- **Magnetic Tape Media**
Metal oxide dispersions, coatings and solvents
- **Photographic**
Film emulsions, make-up and rinse water



Figure 1



Graph 1. Clean Water Flow Rate vs. Differential Pressure per 10" Filter Cartridge @ 25°C

Gravimetric Extractables

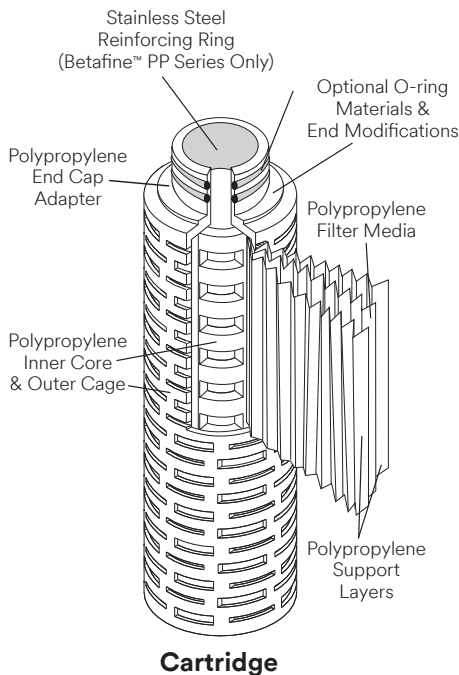
Betafine™ PP and PG series filter cartridges were tested for total gravimetric extractables by a four hour agitated soak test. The test results indicate that Betafine PP and PG series filter cartridges have extractable levels of < 2 mg/ft² of filter area in 21°C water.

Materials of Construction

Betafine PP and PG series filter cartridges are produced from a pleated filter composite containing multiple layers of non-woven polypropylene, supported by upstream and downstream support material. Multiple cartridge lengths of various end modifications are produced by thermal bonding which eliminates the need for adapters. No adhesives are used in the cartridge assembly process. All materials used comply with FDA CFR, Title 21 parts 170–199 for contact with food.

Chemical Compatibility

The compatibility data provided in Table 1 on page 3 is intended as a guide. It is recommended that compatibility with any process be established under actual filtration conditions, since operating parameters may influence compatibility. Consideration must also be given in the selection of suitable gasket materials to confirm complete compatibility.



Betafine™ PP & PG Series All Polypropylene Filter Cartridges

Table 1. Chemical Compatibility

Solution	°C	Betafine™ Series		Solution	°C	Betafine™ Series	
		PP	PG			PP	PG
Acetic Acid 25%	22	G	G	Formaldehyde 37%	22	G	G
Acetic Acid Glacial	22	G	G	Formic Acid Concentrate	22	G	G
Acetone	22	G	G	Glycerol	22	G	G
Acetonitrile	22	L	L	Hydrazine	22	G	G
Ammonia 10%	22	G	G	Hydrochloric Acid 37%	22	N	G
Ammonium Hydroxide 10%	22	G	G	Hydrofluoric Acid	22	N	G
Ammonium Hydroxide 28%	22	G	G	Hydrogen Peroxide Concentrate	22	G	G
Benzaldehyde	22	G	G	Isobutyl Alcohol	22	G	G
Butylaldehyde	22	G	G	Isopropyl Alcohol	22	G	G
Butyl Carbitol Acetate	22	G	G	Methanol	22	G	G
Butyl Cellosolve	22	G	G	Methylene Chloride	22	L	L
n-Butanol	22	G	G	Methyl Cellosolve	22	G	G
n-Butyl Acetate	22	G	G	Methyl Isobutyl Ketone	22	L	L
Butyl Carbitol	22	G	G	Monethanolamine	22	G	G
Carbon Tetrachloride	22	L	L	Nitric Acid	22	G	G
Cellusolve Acetate	22	G	G	n-Propanol	22	G	G
Cellusolve Solvent	22	G	G	Phosphoric Acid, Glacial	22	G	G
Chloroform	22	L	L	Propylene Glycol	22	G	G
Cotton Seed Oil	22	G	G	Pyridine Concentrate	22	L	L
Cyclohexanone	22	L	L	Sodium Hydroxide Concentrate	22	G	G
Diethanolamine	22	G	G	Sodium Hypochlorite	22	G	G
Di-Ethyl Formamide	22	G	G	Sulfuric Acid Concentrate	22	G	G
Di-Methyl Fomamide	22	G	G	Tertiary Butyl Alcohol	22	G	G
Di-Methyl Sulfoxide	22	G	G	Toluene	22	N	N
Ethanol Absolute	22	G	G	Trichloroethylene	22	L	L
Ethyl Acetate	22	L	L	Trichlorotrifluoroethane (Freon)	22	G	G
Ethyl Oleate	22	G	G	Triethylene Glycol	22	G	G
Ether Diethyl	22	L	L	Water	22	G	G
Ethylene Glycol	22	G	G	Water	90	G	G
Ethylene Oxide 12-88%	22	L	L	Xylene	22	N	N

G = Good compatibility to the temperature Indicated. L = Limited compatibility, testing recommended. N = No compatibility.

Operating Parameters & Specifications

Materials of Construction	
Filter Media & Supports	Polypropylene
Inner Core, Outer Cage, End Cap Adapters	Polypropylene
Gasket & O-ring Options	Silicone, Fluorocarbon, EPR
Reinforcing Ring (Betafine™ PP Series only)	Stainless Steel

Dimensions	060	120	250	500	10C
Filtration Surface Area*	7.5 ft ²	8.0 ft ²	8.0 ft ²	8.0 ft ²	8.0 ft ²
Outer Diameter	2.8"				
Length	10", 20", 30", 40"				






Operating Conditions	Betafine™ Series	
	PP	PG
Maximum Differential Pressure	60 psid	
Maximum Operating Temperature	80 °C	60 °C
Heat Sterilization**	121 °C	N/A
Recommended Rinse	15 minutes @ 3 gpm	

Specified Parameters	060	120	250	500	10C
Nominal Rating	0.2 µm	0.65 µm	0.8 µm	2.2 µm	5.4 µm
Absolute Rating	0.6 µm	1.2 µm	2.5 µm	5.0 µm	10.0 µm
Efficiency @ Absolute	> 99.99%				
Extractables	< 2 mg/ft ² of Filter Area				
Rinse up to 18 MΩ**	< 15 minutes				

* Per 10" element.

** Autoclave or *in situ* steam.

Betafine™ PP & PG Series Filter Cartridge Ordering Guide

Code	Nominal Length Code	Gasket/O-ring Material Code	Grade Code/ Rating	Media Code	Control Grade Code	
 70002 Single Open End (SOE) Code 7, 226 O-ring & Bayonet Lock	01 – 10-3/16" 02 – 19-15/16" 03 – 29-11/16"	A – Silicone B – Fluorocarbon C – EPR	060 (0.6 µm) 120 (1.2 µm) 250 (2.5 µm) 500 (5.0 µm) 10C (10.0 µm)	P – Polypropylene		
 70003 SOE, Code 8, 222 O-ring & Bayonet Lock	02 – 19-31/32"					P – Reinforces G – General
 70012 SOE, 222 O-ring	01 – 10-1/4" 02 – 22" 03 – 31"					
 70005 Double Open End (DOE), Flat Gasket	02 – 20" 03 – 30"				G – General	
 70006 DOE, Flat Gasket	01 – 9-3/4" 02 – 19-1/2" 03 – 29-1/4"					

CAUTION: Care must be exercised in applying Betafine equivalent cartridges to competitive housings. While every effort has been made to ensure compatibility, exceptions may exist. A dimensional check is recommended.

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.

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Your local distributor:

3M Purification Inc.

3M Separation and Purification Sciences Division
400 Research Parkway
Meriden, CT 06450 USA

Phone 1-800-243-6894
1-203-237-5541
Fax 1-203-630-4530
Web 3Mpurification.com

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