

# 3M™ Betapure™ PPK Series

## Polypropylene, Non-Woven Depth Filter Cartridges and Capsules

3M™ Betapure™ PPK series filter cartridges and capsules are high-capacity depth filters optimized for oxide and metal slurries used in chemical mechanical planarization (CMP) applications. 3M Betapure PPK series filters are composed of all polypropylene components and feature a multi-zone design for the optimum level of particle classification. This construction helps to enhance flow characteristics, including low-pressure drop, to minimize shearing of the slurry while providing excellent service life.

The objective of a slurry filter is for the majority of particles to pass through it unchanged, while only removing the undesired or “oversized” particles. The oversized particle population is commonly referred to as large particle counts (LPC) and they typically form over time when the suspended particles in the slurry settle to dry forming aggregates, agglomerates, and gels. Large particles can also be the result of adverse shipping conditions, shearing, slurry drying, and interaction with other distribution loop components such as fittings, tanks, piping, valves, and pumps. These large particles can scratch metal and inter-level dielectric layers potentially causing wafer defects. The 3M Betapure PPK filter reduces LPCs and improves yields while maintaining the polishing characteristics of the slurry.



## Features and Benefits

### Multi-Zone Design

- Excellent removal of hard and soft gel contaminants, helps in reducing defectivity and improving yields
- High contaminant holding capacity helps to reduce downtime and increases overall equipment effectiveness
- Provides a low-pressure drop reducing the potential for fluid shear of the slurry

### 100% Polypropylene

- Low cartridge extractables, free of adhesives, binders, and surfactants
- Excellent chemical compatibility with low and high pH slurries

### Quality Manufacturing

- ISO-certified quality management system
- Non-contact welding reduces a potential source for contamination
- Manufactured in a clean environment to provide excellent downstream cleanliness out of the package

## Applications

- CMP Slurry
- Chemicals
- Industrial water
- Food and Beverages\*
- Paints & Coatings
- Inks
- Adhesives
- Ceramic slurries

Large particles can scratch metal and dielectric layers potentially causing wafer defects. Variations in particle size distribution and particle counts in the slurry can affect the repeatability of the planarization process. In both cases, major reductions in large particle counts can be associated with proper filtration, resulting in reduced defectivity and an increase in yields. Proper filtration also provides a consistent quality of slurry which enables repeatability of the planarization process. The ideal slurry filter will have a retention curve that closely aligns with the particle size

distribution (PSD) of “undesired” particles to be removed. 3M Betapure PPK filters can maintain the polishing characteristics of the slurry, maximize contaminant holding capacity, and helps to increase filter lifetime.

3M Betapure PPK series filter media is specifically engineered to provide low-pressure drop and high retention (Figure 1). The media structure provides a sharp cut-off that will not alter the percent solids or desired target size particles thus preserving the polishing characteristics of the slurry.

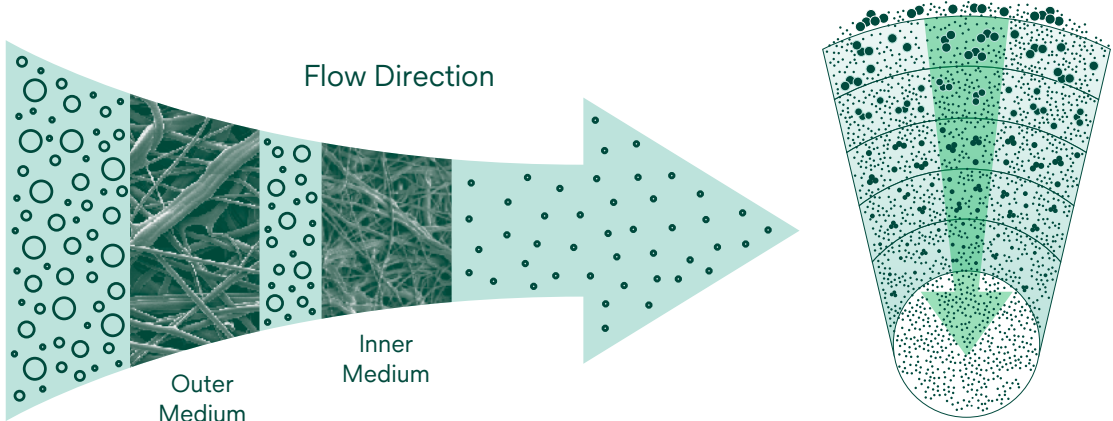


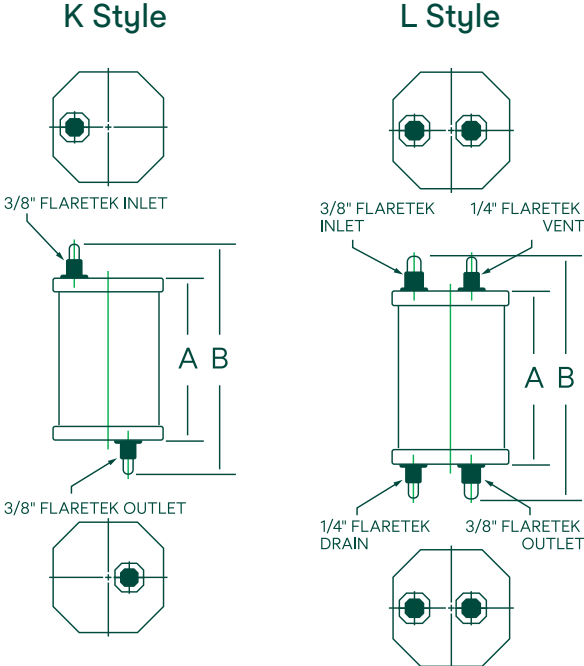
Figure 1: Multi Zone Design

**3M Betapure PPK Capsule Construction:**

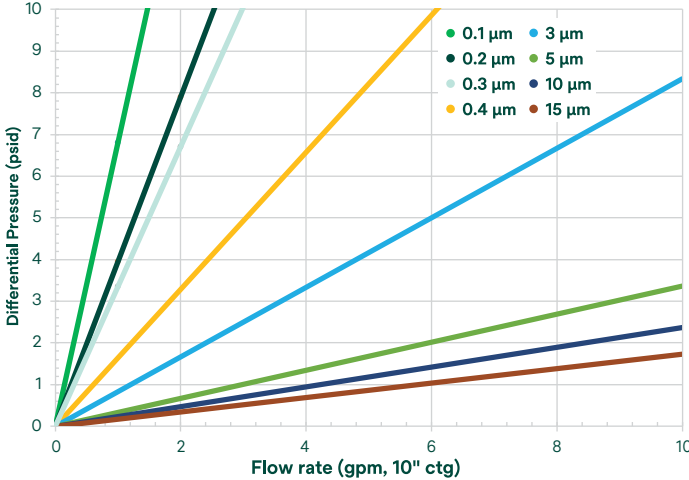
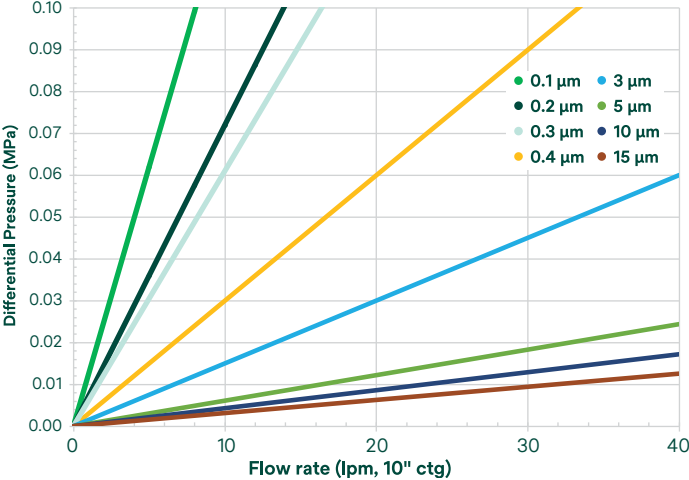
PPK filter capsules are constructed using all polypropylene components. Capsules are manufactured using advanced thermoplastic welding techniques – no adhesives, binders, or surfactants are used in the process.

**3M Betapure PPK Capsule Configuration:**

Capsule Style	Length Code	Dim. A	Dim. B
K	04	5.54"	7.88"
L	04	5.54"	7.88"

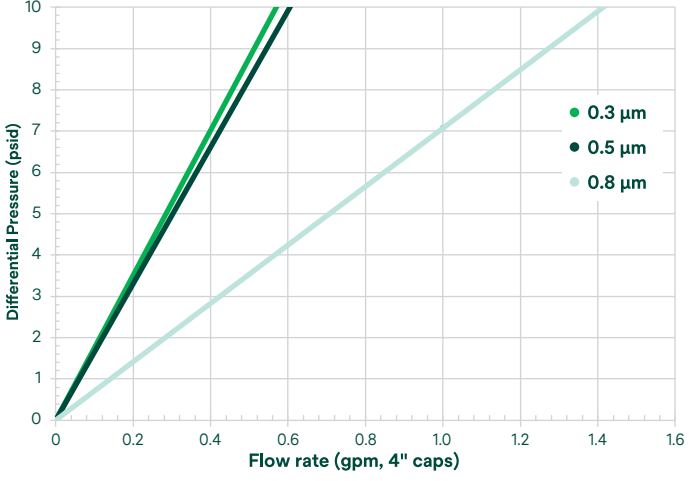
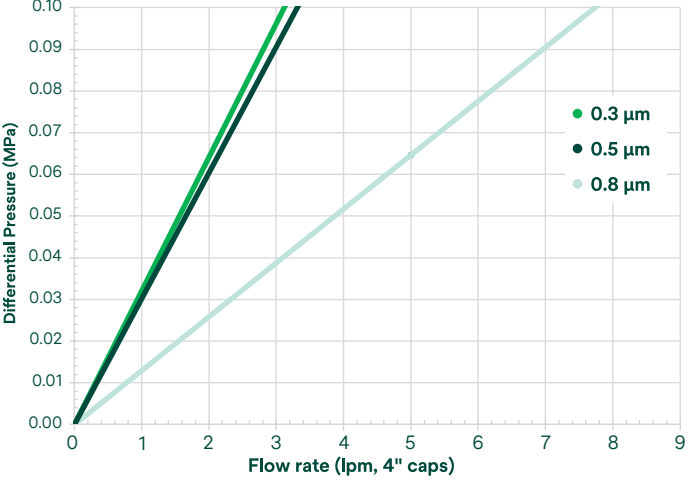


Test Fluid: Water at ambient temperature



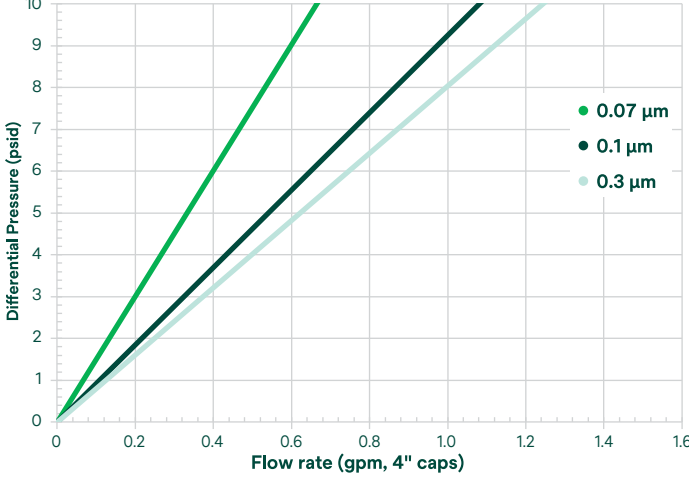
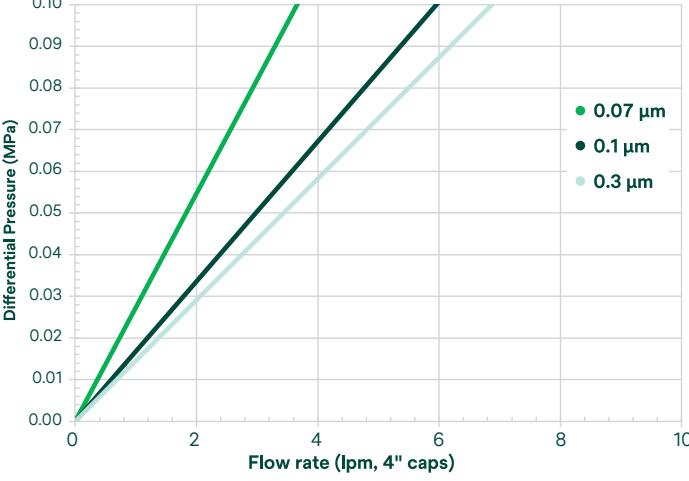
Graph 1: 3M Betapure PPK Series Filter Flow Rate vs. Differential Pressure

Test Fluid: Water at ambient temperature



Graph 2: 3M Betapure PPK Series Capsules Flow Rate vs. Differential Pressure

Test Fluid: Water at ambient temperature



Graph 3: 3M Betapure PPK Series Speciality Capsules Flow Rate vs. Differential Pressure

## 3M Betapure PPK Series Cartridges and Capsules

### Technical Specifications – 3M Betapure PPK Filter Cartridge

Material of Construction	
• Media, Support Layers, Core and Endcaps	Polypropylene
• O-ring	EPR and Silicone
• Flat Gasket	Polyethylene
Operating Conditions	
Maximum Forward Differential Pressure	80 psid @ 77°F (5.5 bar @ 25°C)
	30 psid @ 140°F (2.0 bar @ 60°C)
Maximum Operating Temperature	176°F (80°C)

### Compliance

Standard
ISO 9001 Registered Quality System
Japan Food Sanitation Act compliant materials of construction*

\*For details related to specific use conditions or limitations for food contact applications please contact your Solventum representative for more information.

### Technical Specifications – 3M Betapure PPK Filter Capsule

Material of Construction	
• Media, Support Layers, Core and Endcaps	Polypropylene
• Capsule Body, Fittings	
• O-ring	EPR
Operating Conditions	
Maximum Operating Pressure	60 psig @ 104°F (4.1 bar @ 40°C)
Maximum Forward Differential Pressure	40 psid @ 104°F (2.7 bar @ 40°C)
Maximum Operating Temperature	104°F (40°C)

### Technical Specifications – 3M Betapure PPK Filter Speciality Capsule

Material of Construction	
• Media, Support Layers, Core and Endcaps	Polypropylene
• Capsule Body, Fittings	
• O-rings	Ethylene Propylene Rubber (EPR)
• Capsule Overall Length	8.25" (210 mm)
• Capsule Diameter	3.75" (95mm)
Operating Conditions	
Maximum Operating Pressure	50 psig @ 75°F (3.4 bar @ 24°C)
Maximum Forward Differential Pressure	40 psid @ 75°F (2.7 bar @ 24°C)
Maximum Operating Temperature	75°F (24°C)

## 3M Betapure PPK Series Ordering Guide

Grade	Model Number	3M ID	Global ID	Description - Length	Description - O-ring	Description - End Treatments
0.1	PPK-01NG-0001 5P	UU011986617	7100282984	1"	NG	DOE
0.1	PPK-02FC-0001 3P	UU011986179	7100282745	2"	EPR	222/FLAT
0.1	PPK-09NG-0001	UU011996525	7100282991	9-3/4"	PE Gasket	DOE
0.1	PPK-10FC-0001	UU011996673	7100281301	10"	EPR	222/FLAT
0.1	PPK-20FC-0001	UU011996699	7100281303	20"	EPR	222/FLAT
0.2	PPK-01NG-0002 5P	UU011986625	7100282985	1"	NG	DOE
0.2	PPK-02FC-0002 3P	UU011986583	7100282751	2"	EPR	222/FLAT
0.2	PPK-09NG-0002	UU011996533	7100282992	9-3/4"	PE Gasket	DOE
0.2	PPK-10FC-0002	UU011996707	7100281304	10"	EPR	222/FLAT
0.2	PPK-19NG-0002	UU011996541	7100282993	19-1/2"	PE Gasket	DOE
0.2	PPK-20FC-0002	UU011996723	7100281313	20"	EPR	222/FLAT
0.2	PPK-29NG-0002	UU011996558	7100282994	29-1/4"	PE Gasket	DOE
0.3	PPK-01NG-0003 5P	UU011986633	7100282986	1"	NG	DOE
0.3	PPK-02FC-0003 3P	UU011986591	7100282752	2"	EPR	222/FLAT
0.3	PPK-10FC-0003	UU011996731	7100281314	10"	EPR	222/FLAT
0.3	PPK-10NG-0003	UU011996574	7100282996	10"	PE Gasket	DOE
0.3	PPK-19NG-0003	UU011996582	7100282997	19-1/2"	PE Gasket	DOE
0.3	PPK-20CC-0003	UU011996749	7100281315	20"	EPR	222/SPEAR
0.3	PPK-20FC-0003	UU011996764	7100281317	20"	EPR	222/FLAT
0.3	PPK-30NG-0003	UU011996608	7100282999	30"	PE Gasket	DOE
0.4	PPK-01NG-0004 5P	UU011986641	7100282987	1"	NG	DOE
0.4	PPK-02FC-0004 3P	UU011986609	7100282983	2"	EPR	222/FLAT
0.4	PPK-09NG-0004	UU011996616	7100283000	9-3/4"	PE Gasket	DOE
0.4	PPK-10NG-0004	UU011996624	7100281296	10"	PE Gasket	DOE
0.4	PPK-19NG-0004	UU011996632	7100281297	19-1/2"	PE Gasket	DOE
0.4	PPK-29NG-0004	UU012634885	7100305322	29-1/4"	PE Gasket	DOE
0.4	PPK-30CC-0004	UU012986079	7100327212	30"	EPR	222/SPEAR
3	PPK003P20FC	70-0203-6584-0	7100309379	20"	EPR	222/FLAT
3	PPK003P40CC	70-0203-6586-5	7100309380	40"	EPR	222/SPEAR
5	PPK-02FC-0050 3P	UU012986103	7100327215	2"	EPR	222/FLAT
5	PPK-09NG-0050	UU012986913	7100327216	9-3/4"	PE Gasket	DOE
5	PPK-10FC-0050	UU012986087	7100327213	10"	EPR	222/FLAT
5	PPK-19NG-0050	UU012986921	7100327217	19-1/2"	PE Gasket	DOE
5	PPK-20FC-0050	UU012986095	7100327214	20"	EPR	222/FLAT
5	PPK-29NG-0050	UU012986939	7100327218	29-1/4"	PE Gasket	DOE
5	PPK-30BA-0050	UU013070295	7100332826	30"	SLCN	226/SPEAR
10	PPK-02FC-0100 3P	UU012986970	7100327222	2"	EPR	222/FLAT
10	PPK-09NG-0100	UU012986988	7100327223	9-3/4"	PE Gasket	DOE
10	PPK-10FC-0100	UU012986947	7100327219	10"	EPR	222/FLAT
10	PPK-19NG-0100	UU012986996	7100327224	19-1/2"	PE Gasket	DOE
10	PPK-20FC-0100	UU012986954	7100327220	20"	EPR	222/FLAT
10	PPK-29NG-0100	UU012987002	7100327225	29-1/4"	PE Gasket	DOE
10	PPK-30FC-0100	UU012986962	7100327221	30"	EPR	222/FLAT
10	PPK-30BA-0100	UU013070303	7100332827	30"	SLCN	226/SPEAR
15	PPK-02FC-0150 3P	UU012987044	7100327229	2"	EPR	222/FLAT
15	PPK-09NG-0150	UU012987051	7100327230	9-3/4"	PE Gasket	DOE
15	PPK-10FC-0150	UU012987010	7100327226	10"	EPR	222/FLAT
15	PPK-19NG-0150	UU012987069	7100327231	19-1/2"	PE Gasket	DOE
15	PPK-20FC-0150	UU012987028	7100327227	20"	EPR	222/FLAT
15	PPK-29NG-0150	UU012987077	7100327232	29-1/4"	PE Gasket	DOE
15	PPK-30FC-0150	UU012987036	7100327228	30"	EPR	222/FLAT
15	PPK-30BA-0150	UU013070618	7100332828	30"	SLCN	226/SPEAR

<sup>1</sup> Betapure PPK grade (0.1- 0.4)µm series filters feature a multi-layer non-woven depth design

<sup>2</sup> Betapure PPK grade (5-15)µm series filters are graded porosity depth design

## 3M Betapure PPK Series Capsule Ordering Guide

Grade (Absolute)	Model Number	3M ID	Global ID	Product Description
0.3	PPKC0003C04KC06	70-0203-6580-8	7100309375	3M Betapure PPK series filter capsule, 0.3µm, 4" long, 3/8" flaretek in/out no vent, no drain. EPR, 6 pack
0.3	PPKC0003C04LC06	70-0203-6578-2	7100309371	3M Betapure PPK series filter capsule, 0.3µm, 4" long, 3/8" flaretek in/out, 1/4" flaretek vent/drain, EPR, 6 pack
0.5	PPKC0005C04LC01	70-0203-6579-0	7100309377	3M Betapure PPK series filter capsule, 0.5µm, 4" long, 3/8" flaretek in/out, 1/4" flaretek vent/drain, EPR, 1 pack
0.5	PPKC0005C04KC06	70-0203-6577-4	7100309374	3M Betapure PPK series filter capsule, 0.5µm, 4" long, 3/8" flaretek in/out no vent, no drain. EPR, 6 pack
0.5	PPKC0005C04KC01	70-0203-6581-6	7100309372	3M Betapure PPK series filter capsule, 0.5µm, 4" long, 3/8" flaretek in/out no vent, no drain. EPR, 1 pack
0.8	PPKC0008C04KC01	70-0203-6582-4	7100309376	3M Betapure PPK series filter capsule, 0.8µm, 4" long, 3/8" flaretek in/out no vent, no drain. EPR, 1 pack
0.8	PPKC0008C04LC06	70-0203-6583-2	7100309378	3M Betapure PPK series filter capsule, 0.8µm, 4" long, 3/8" flaretek in/out, 1/4" flaretek vent/drain, EPR, 6 pack

## 3M Betapure PPK Series Specialty Capsule Ordering Guide

Grade (Nominal)	Model Number	3M ID	Global ID	Product Description
0.07	PPKC00007BW04AC06	UU012704928	7100308804	3M Betapure PPK serial filter capsule, PPK 0.07µm depth filter, 5 inch
0.1	PPKC0001BW04AC06	UU012704936	7100308805	3M Betapure PPK serial filter capsule, PPK 0.1µm depth filter, 5 inch
0.3	PPKC0003BW04AC06	UU012704944	7100308806	3M Betapure PPK serial filter capsule, PPK 0.3µm depth filter, 5 inch

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