

# Zeta Plus™ LA Series

Low Aluminum Filter Media

Zeta Plus™ LA series low aluminum (LA) filter media are designed to provide low levels of metallic extractables, especially aluminum. This premium grade low aluminum filter media are ideally suited for parenteral, blood fraction and bioprocess solutions. Stringent quality controls are established for each production lot.

Zeta Plus LA series filter media exhibits a positive electrokinetic charge that enhances filtration efficiency when compared to other depth filters. When used as a prefilter, the high contaminant holding capacity of Zeta Plus LA series filter media prolongs final filter life.

## Pharmaceutical Grade Media

Zeta Plus LA series filter are compliant with the USP <88> Class VI Biological Reactivity Tests.

## Characteristics

### Superior Particle Reduction

Zeta Plus filter media offers unique advantages in contaminant reduction because of its electrokinetic properties, in addition to the mechanical exclusion of particles by its depth loading feature. Zeta Plus filter media adsorbs contaminants too small for reduction by mechanical straining. Since most particles in suspension have been shown to exhibit a negative charge, virtually all contaminants can be reduced with proper media grade selection.



## Applications

**Pharmaceuticals** Small & Large Volume  
Parenterals,  
Blood Fractions

**Bioprocess Fluids**

## Features & Benefits

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**Depth filtration media designed to retain contaminants by mechanical entrapment and electrokinetic adsorption.**

High contaminant holding capacity for economical filtration and reliable particle reduction.

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**High purity pre-extracted filter aid.**

Low extractable.

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**Full range of scaleable capsule and cartridge filter configurations.**

Allows pilot testing and scale-up with the same materials that will be used in full-scale systems.

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**FDA Drug Master File and USP <88> Class VI Biological Reactivity Tests.**

Supports risk assessments, validation and regulatory submissions by providing vital documentation and traceability.

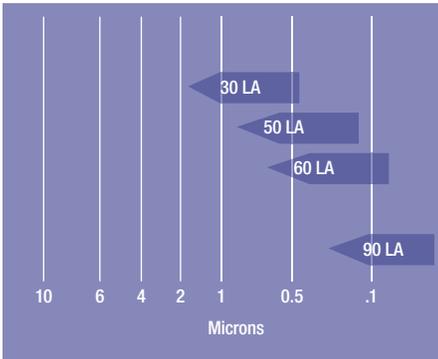
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**Self-contained, single-use disposable capsule and cartridge modules.**

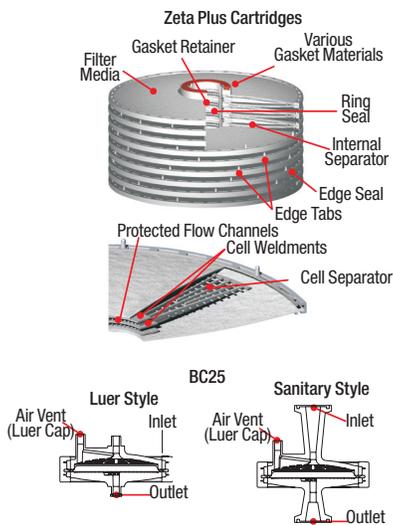
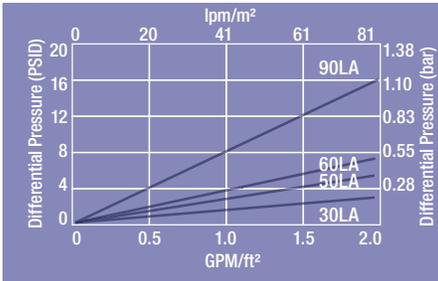
Reduced labor time for change-outs and elimination of cleaning validation.

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**Chart 1: Media Grade Selection Guide**



**Graph 1: Water Flow Rate at 25°C**



### Grade Selection

Zeta Plus™ LA series low aluminum (LA) filter media are available in a broad range of grades. The nominal reduction rating for each grade is indicated in Chart 1. This information is intended for use as a guide to filter selection as particles smaller than the rated pore size will be reduced, due to electrokinetic adsorption, by Zeta Plus LA series filter media. Actual operating conditions and the product to be filtered should be considered in grade selection. The optimal filtration system for your particular application can be determined by on-site test equipment or sample evaluation in our laboratory.

### High Contaminant Load

Zeta Plus LA series filter media are a graded density depth filter. Large pores on the surface retain large particles, and more numerous smaller pores within the interior of the filter matrix trap smaller particles. The combination of graded density and the increased surface area of a depth filter results in higher contaminant load capacity.

### Chemical Compatibility

Excellent results have been achieved with the use of Zeta Plus LA series filter media in the purification of a broad range of products. When reviewing cartridge compatibility, gasket ratings must also be reviewed. For more information about Zeta Plus LA series filter media compatibility, contact your local 3M Distributor or 3M Technical Support.

### Filter Media Selection

Zeta Plus filter cartridges and capsules have been designed to provide clean, easy to use filtration systems that offer significant advantages over conventional filter press operations. The Zeta Plus cartridges have been designed to be *in situ* steamed, autoclaved, or chemically sterilized. The capsules capsules have been designed to be autoclaved.

### Filter Sheets & Discs

Zeta Plus LA series filter media are available in die-cut discs and sheets for use in plate and frame filter presses.

### Cartridge & Capsule Construction

Cartridges and capsules are constructed from individual cells of Zeta Plus LA series filter media assembled together with polypropylene separators under predetermined compression. Standard cartridges are unitized by three 316 stainless steel bands. Plug-in cartridges utilize a polypropylene post. Each cell is constructed using polypropylene molded edge seals and separators for high performance.

The Zeta Plus Encapsulated System includes capsule filters with effective filtration areas at 170 cm<sup>2</sup> (0.18 ft<sup>2</sup>), 340 cm<sup>2</sup> (0.37 ft<sup>2</sup>), 1020 cm<sup>2</sup> (1.10 ft<sup>2</sup>), 0.23 m<sup>2</sup> (2.4 ft<sup>2</sup>), and 2.5 m<sup>2</sup> (27.0 ft<sup>2</sup>). They are ideal for both the scale-up studies as well as large scale production. Please refer to 3M Literature 70-0202-3967-2 for more information on Zeta Plus Encapsulated System and Zeta Plus Scale-Up Capsule single-use products.

Table 1: Materials of Construction

Configuration	Component	Material
BC25 Capsule	Capsule Shell	Polypropylene
	Overmold	Glass Filled Polypropylene
Zeta Plus™ Cartridges	Cartridge Support, Cell Separators & Edge Seal	Polypropylene
	Compression Bands	316 Stainless Steel

Table 2: Cartridge Configurations

Catalog Number	Nom. Diameter		Height		Number of Cells	Std. Pkg. Units/Carton
	cm	in	cm	in		
45109	20.3	8	16.8	6 5/8	8	15
45167	20.3	8	16.8	6 5/8	7	2
45230	30.5	12	27.3	10 3/4	15	2
45237	30.5	12	27.3	10 3/4	12	2
45244	30.5	12	17.8	7 1/16	9	2
45245	30.5	12	27.3	10 3/4	16	3
Z8FA2	20.3	8	8.9	3 1/2	2	8
Z8FA4	20.3	8	12	4 3/4	4	8
Z16P	40.6	16	27.3	10 3/4	14	1
Z16H	40.6	16	27.3	10 3/4	16	1
Z16H	40.6	16	27.3	10 3/4	17	1

Table 3: Zeta Plus LA Series Filter Cartridge Surface Area

Cartridge Configuration	Surface Area
BC25 Capsule	25 cm <sup>2</sup> (3.9 in <sup>2</sup> )
45109 (8 diameter cartridge, 8-cell)	260 cm <sup>2</sup> (2.8 ft <sup>2</sup> )
45167 (8 diameter cartridge, 7-cell, o-ring plug-in)	0.23 m <sup>2</sup> (2.4 ft <sup>2</sup> )
Z8FA2NPX2 (8 diameter cartridge, 2-cell plug-in)	650 cm <sup>2</sup> (0.7 ft <sup>2</sup> )
Z8FA4NPX2 (8 diameter cartridge, 4-cell plug-in)	1300 cm <sup>2</sup> (1.4 ft <sup>2</sup> )
45230 (12 diameter cartridge, 15-cell)	1.4 m <sup>2</sup> (15.4 ft <sup>2</sup> )
45237 (12 diameter cartridge, 12-cell)	1.1 m <sup>2</sup> (12.3 ft <sup>2</sup> )
45244 (12 diameter cartridge, 9-cell)	0.85 m <sup>2</sup> (9.2 ft <sup>2</sup> )
45245 (12 diameter cartridge, 16-cell)	1.5 m <sup>2</sup> (16.4 ft <sup>2</sup> )
Z16P (16 diameter cartridge, 14-cell)	3.2 m <sup>2</sup> (34.7 ft <sup>2</sup> )
Z16H (16 diameter cartridge, 16-cell)	3.7 m <sup>2</sup> (39.7 ft <sup>2</sup> )
Z16H (16 diameter cartridge, 17-cell)	3.9 m <sup>2</sup> (42.2 ft <sup>2</sup> )

Table 4: Recommended Operating Parameters

Maximum Operating Pressure	BC25 Capsules	2.8 bar (40 psig) maximum inlet pressure, 2.4 bar (35 psid) maximum capsule pressure drop.
	Standard Zeta Plus Cartridges	2.4 bar (35 psid) maximum cartridge pressure drop.
Maximum Operating Temperature	BC25 Capsules	40°C (104°F)
	Zeta Plus Cartridges	82°C (180°F)
Minimum Required Pre-conditioning Flush		54 L/m <sup>2</sup> (1.33 gal/ft <sup>2</sup> ) with water, or other suitable fluid, at a volumetric flow rate up to 1200 L/m <sup>2</sup> /hr
Sterilization Parameters	BC25	Autoclave 30 min. at 121°C (250°F) (1 cycle).
	Standard Zeta Plus Cartridges	Autoclave or <i>In situ</i> steam sterilize 30 minutes @ 126°C (259°F) (3 cycles)

# Zeta Plus™ LA Series Low Aluminum Filter Media Ordering Guide

## BC Capsules

Catalog Number	Configuration	Media Grade	Formulation
BC0025	L - Luer S - Sanitary	30-50-60-90	LA

## 8" Diameter Cartridges

Catalog Number	No. of Cells	Configuration	Material	Gasket Material	Packaging Code	Media Grade	Formulation
Z8FA (8" Plug In Style)	2 (2 cell) 4 (4 cell)	N - None	P - Polypropylene	A - Silicone B - Fluorocarbon K - PTFE-Encapsulated Fluorocarbon	2 - Standard	30-50-60-90	LA

Basic Cartridge Design	Gasket Material	Media Grade	Formulation
45109 (8" - 8 Cell)	13 - Fluorocarbon	30-50-60-90	LA
45167 (8" - 7 Cell) Plug In	03 - Fluorocarbon 04 - Silicone		

## 12" Diameter Cartridges

Basic Cartridge Design	Geometric Variation	Gasket Material	Media Grade	Formulation
45320 <sup>1</sup> (12" - 15 Cell) 45237 <sup>1</sup> (12" - 12 Cell) 45244 <sup>1</sup> (12" - 9 Cell) 45245 <sup>1</sup> (12" - 16 Cell)	01- Unfilled Polypropylene Edge Seal 02 - Talc Filled Polypropylene Edge Seal	A - Silicone B - Fluorocarbon E - PTFE	30-50-60-90	LA

## 16" Diameter Cartridges

Basic Cartridge Design	Configuration	Gasket Material	Media Grade	Formulation	Lifting Handle <sup>2</sup>
Z16	P - 14 cell H - High area <sup>3</sup> R - 14 cell (Hastelloy® bands) T - High area (Hastelloy bands)	A - Silicone B - Fluorocarbon E - PTFE	30-50-60-90	LA	H - with Handle

<sup>1</sup> Omit "H" from part number if lifting handle is not required. Bodyfeed cartridge available, please order 45802 (16", 9 cell)

<sup>2</sup> High Area Cell Count - 16 cells for grade 30 & 50; 17 cells for grade 60 & 70.

### Product Use

**Identified uses:** Manufacturing of pharmaceutical (drug) products, including active pharmaceutical ingredients and vaccines.

**Prohibited uses:** As a component in a medical device that is regulated by any agency, and/or globally exemplary agencies, including but not limited to: a) FDA, b) European Medical Device Directive (MDD), c) Japan Pharmaceuticals and Medical Devices Agency (PMDA); Applications involving permanent implantation into the body; Life-sustaining medical applications; Applications requiring FDA Food Contact compliance without use restrictions

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