

# Zeta Plus™ LA Series

## Low Aluminum Filter Media

Zeta Plus™ LA Series Low Aluminum Filter Media is designed to provide low levels of metallic extractables, especially aluminum. This premium grade low aluminum filter media is ideally suited for parenteral, blood fraction, dextrose, bioprocess solutions and infant food/formula applications. The Zeta Plus LA Series are constructed from materials listed in 21 CFR. Stringent quality controls ensure maximum product performance for each production lot.

The 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 Media is manufactured to procedures described in 3M Purification's Drug Master Files on record with the FDA. They are non-toxic in accordance with the USP Class VI, "Biological Safety Test for Plastics," and meet the strict requirements specified in the Drug Master File, including product control and traceability.

### Characteristics

#### Superior Particle Removal

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

## 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 removal.

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#### 3M Purification high purity pre-extracted filter aid.

- Low extractable, fast rinse-up.

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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 Class VI Biological Safety.

- Eases 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 changeouts and elimination of cleaning validation.
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## Applications

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

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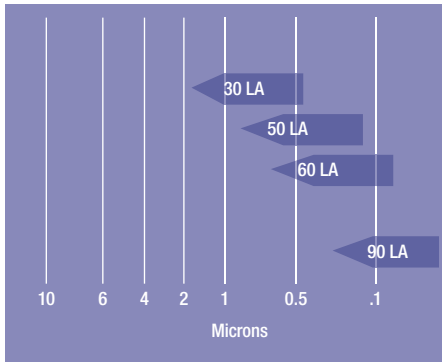
**Bioprocess Fluids**

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**Food & Beverage** Infant Formula & Foods

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**Chart 1: Media Grade Selection Guide**



### Grade Selection

Zeta Plus LA Series Low Aluminum Filters are available in a broad range of grades. The nominal removal 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 removed, 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. Technical support for optimal grade selection is provided by your local 3M Purification Distributor or 3M Purification Process Filtration Applications Engineers. The optimal filtration system for your particular application can be determined by on-site test equipment or sample evaluation in our Applications Laboratory.

### High Contaminant Load

Zeta Plus LA Series filter media is 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 Purification Distributor or 3M Purification Technical Support.

### Filter Media Selection

Zeta Plus LA Series filter cartridges have been designed to provide clean, easy to use filtration systems that offer significant advantages over conventional filter press operations. The Zeta Plus LA Series filter media have been designed to be heat (both *in-situ* steam and autoclave for one hour at 121°C [250°F]) and chemically sterilized.

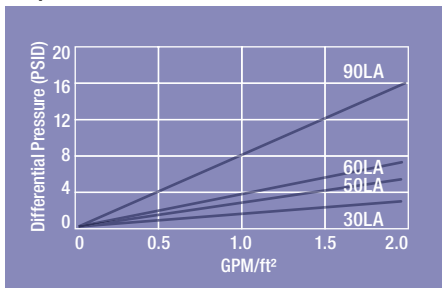
### Filter Sheets & Discs

Zeta Plus LA Series filter media is available in die-cut discs and sheets for use in plate and frame filter presses. Because of the higher flow capabilities and greater contaminant retention of Zeta Plus LA Series filter media as compared to other types of filter sheets, it is often possible for filter press users to reduce their filter sheet usage by 20 to 50 percent in processing equivalent volumes of products.

### 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 and BC1000/2000 utilize a polypropylene post. Each cell is constructed using polypropylene molded edge seals and separators for high performance. Various gasket materials are available depending upon application.

**Graph 1: Water Flow Rate at 25°C**



**Table 1: Materials of Construction**

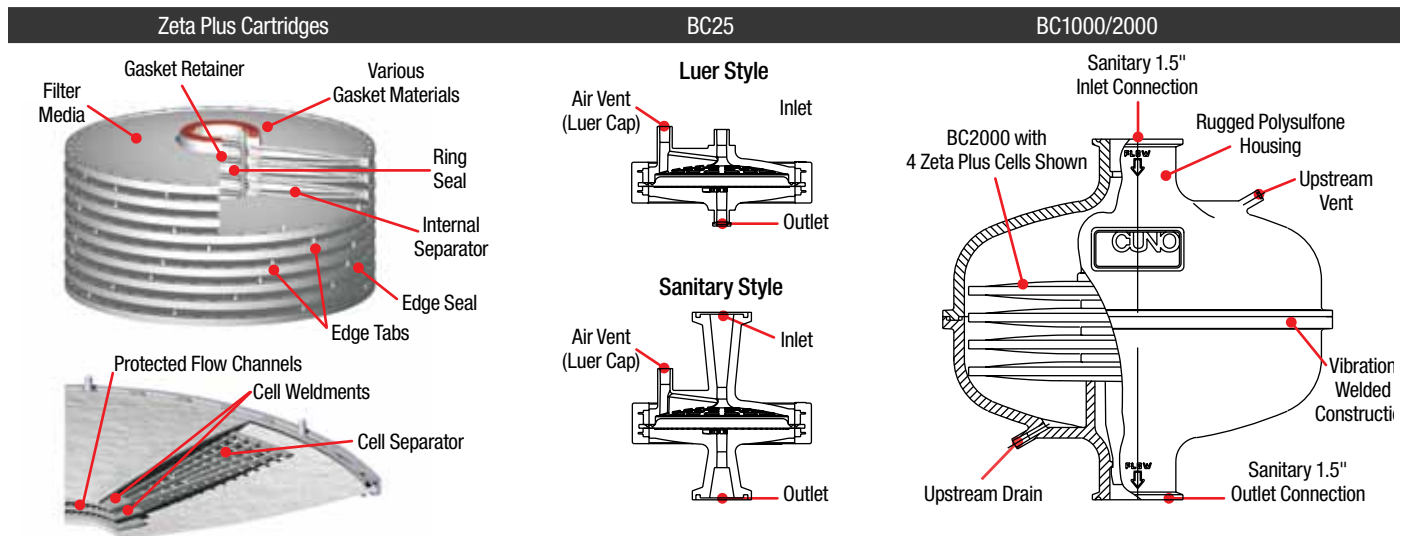
Configuration	Component	Material
BC25 Capsule	Capsule Shell	Polypropylene
	Overmold	Glass Filled Polypropylene
BC1000 & 2000 Capsules	Capsule Shell	Polysulfone
	Cartridge Support, Cell Separators, Edge Seal & Vent Cap	Polypropylene
Zeta Plus Cartridges	Cartridge Support, Cell Separators & Edge Seal	Polypropylene
	Compression Bands	316 Stainless Steel

Table 4: Cartridge Configurations

Catalog Number	Nom. Diameter (Inches)	Height (Inches)	Number of Cells	Std. Pkg. Units/Cartron
45109	8	6 5/8	8	15
45167	8	6 5/8	7	2
45230	12	10 3/4	15	2
45237	12	10 3/4	12	2
45244	12	7 11/16	9	2
45245	12	10 3/4	16	3
Z8FA2	8	3 1/2	2	8
Z8FA4	8	4 3/4	4	8
Z16P	16	10 3/4	14	1
Z16H	16	10 3/4	16	1
Z16H	16	10 3/4	17	1

Table 5: Zeta Plus LA Series Filter Cartridge Surface Area

Cartridge Configuration	Surface Area
BC25 Capsule	3.9 in² (25 cm²)
BC1000 Capsule	0.7 ft² (650 cm²)
BC2000 Capsule	1.4 ft² (1300 cm²)
45109 (8 diameter cartridge, 8-cell)	2.8 ft² (0.26 m²)
45167 (8 diameter cartridge, 7-cell, o-ring plug-in)	2.5 ft² (0.23 m²)
Z8FA2NPX2 (8 diameter cartridge, 2-cell plug-in)	0.7 ft² (650 cm²)
Z8FA4NPX2 (8 diameter cartridge, 4-cell plug-in)	1.4 ft² (1300 cm²)
45230 (12 diameter cartridge, 15-cell)	15.4 ft² (1.4 m²)
45237 (12 diameter cartridge, 12-cell)	12.3 ft² (1.1 m²)
45244 (12 diameter cartridge, 9-cell)	9.2 ft² (0.85 m²)
45245 (12 diameter cartridge, 16-cell)	16.4 ft² (1.5 m²)
Z16P (16 diameter cartridge, 14-cell)	34.7 ft² (3.2 m²)
Z16H (16 diameter cartridge, 16-cell)	39.7 ft² (3.7 m²)
Z16H (16 diameter cartridge, 17-cell)	42.2 ft² (3.9 m²)



Recommended Operating Parameters

Maximum Operating Pressure	BC25 Capsules: 40 psig max. inlet pressure, 35 psi max. capsule pressure drop. BC1000/2000 Series Capsules: 80 psig at 25°C, 40 psig at 60°C, max. inlet pressure; 35 psi max. capsule pressure drop. Standard Zeta Plus Cartridges: 35 psi max. cartridge pressure drop.
Maximum Operating Temperature	BC25 Capsules: 40°C BC1000/2000 Capsules: 60°C Zeta Plus Cartridges: LA 82°C (180°F)
Recommended Pre-use Rinse	1.3 gal/ft² at 0.5 gpm/ft², 50 l/m² at 20 lpm/m²
Sterilization Parameters	BC25: Autoclave 30 min. at 121°C (1 cycle). BC1000/2000: Autoclave 30 min. at 121°C (up to 3 cycles). Standard Zeta Plus Cartridges: Autoclave or <i>In-situ</i> steam sterilize 1 hr. at 121°C.
Recommended Flow Rates	BC25 Capsule: 3 - 30 ml/min. BC1000 Capsule: 0.1 gpm (0.4 lpm) BC2000 Capsule: 0.2 gpm (0.8 lpm) Standard Zeta Plus Cartridges: 0.25 gpm/ft² (10.2 lpm/m²)

# Zeta Plus™ LA Series Ordering Guide

## Zeta Plus LA Series BC Capsule Ordering Guide

Catalog Number	Configuration	Grade	Media
BC0025	L - Luer S - Sanitary	30-50-60-90	LA
BC1000 (8" 2 cell) BC2000 (8" 4 cell)	A - Single Pack B - 3 Pack		

## Zeta Plus LA Series 8" and 12" Cartridges

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

Basic Cartridge Design	Gasket Material	Grade	Media	Control
45109 (8" - 8 Cell)	11 - Nitrile 13 - Fluorocarbon 14 - EPR	30-50-60-90	L - Inorganic Filter Aid & Cellulose	A - Low Aluminum
45167 (8" - 7 Cell) Plug In	01 - Nitrile 02 - EPR 03 - Fluorocarbon 04 - Silicone			

## 12" Diameter Cartridges

Basic Cartridge Design	Geometric Variation	Gasket Material	Grade	Media	Control
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 C - EPR D - Nitrile E - PTFE	30-50-60-90	L - Inorganic Filter Aid & Cellulose	A - Low Aluminum

## 16" Diameter Cartridges

Basic Cartridge Design	Configuration	Gasket Material	Grade	Media	Control	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 C - EPR D - Nitrile E - PTFE	30-50-60-90	L - Inorganic Filter Aid & Cellulose	A - Low Aluminum	H - with Handle

2 Omit "H" from part number if lifting handle is not required. Bodyfeed cartridge available, please order 45802 (16", 9 cell) 3 High Area Cell Count - 30 & 50 = 16 Cell; 60 & 90 = 17 Cell

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