

3M Purification

Zeta Plus™ LA Series

Low Aluminum Filter Media



Applications

Pharmaceuticals Small & Large Volume
Parenterals, Dialysates,
Blood Fractions

Bioprocess Fluids

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, dialysates, bioprocess solutions and infant food/formula applications. Zeta Plus™ LA series filter media are constructed from materials listed in 21 CFR. Stringent quality controls ensure maximum product performance 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 media are manufactured to procedures described in 3M Purification's Drug Master Files on record with the FDA. The media are non-toxic in accordance with the USP Class VI, "Biological Safety Test for Plastics," and meets the strict requirements specified in the Drug Master File, including product control and traceability.

Characteristics

Superior Particle Reduction

Zeta Plus™ filter media offers unique advantages in contaminant reduction 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 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.

Features & Benefits

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

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

High purity pre-extracted filter aid.

- Low extractable, fast rinse-up.

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.

FDA Drug Master File and USP Class VI Biological Safety.

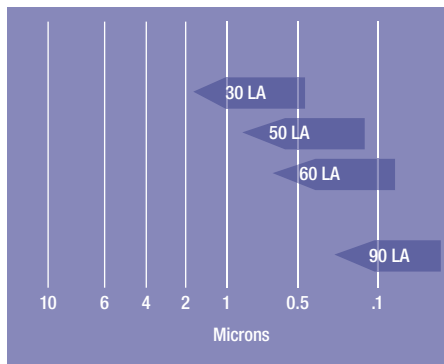
- Eases validation and regulatory submissions by providing vital documentation and traceability.

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

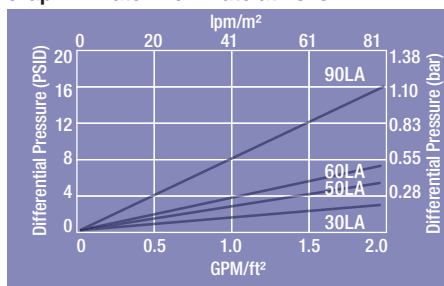
- Reduced labour time for change-outs and elimination of cleaning validation.²¹



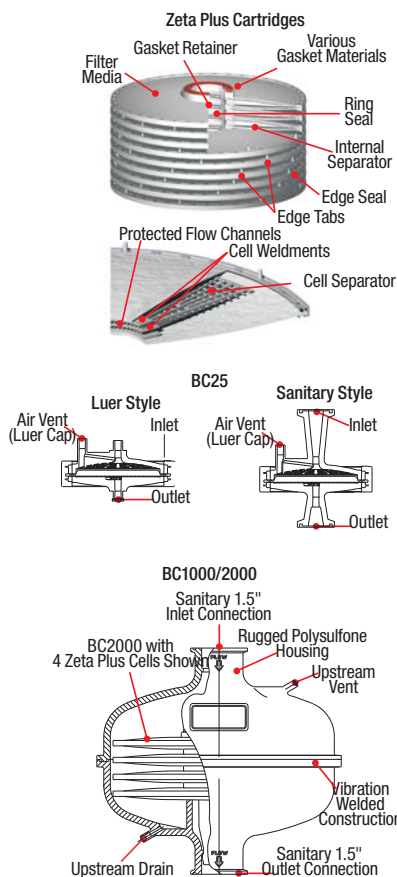
Chart 1: Media Grade Selection Guide



Graph 1: Water Flow Rate at 25°C



1 gpm/ft² = 40.7 lpm/m²
1 bar = 100 kPa



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. Technical support for optimal grade selection is provided by your local Distributor or Scientific Applications Support Services (SASS) staff. The optimal filtration system for your particular application can be determined by on-site test equipment or sample evaluation in our SASS 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 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 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. 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% 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.

The Zeta Plus™ Encapsulated System includes capsule filters with effective filtration areas at 170 cm², 340 cm², 1020 cm², 0.23 m² and 2.5 m². They are ideal for both the scale-up studies as well as large scale production. Please refer to 3M Literature 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
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 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 ²
BC1000 Capsule	650 cm ²
BC2000 Capsule	1300 cm ²
45109 (8 diameter cartridge, 8-cell)	260 cm ²
45167 (8 diameter cartridge, 7-cell, o-ring plug-in)	0.23 m ²
Z8FA2NPX2 (8 diameter cartridge, 2-cell plug-in)	650 cm ²
Z8FA4NPX2 (8 diameter cartridge, 4-cell plug-in)	1300 cm ²
45230 (12 diameter cartridge, 15-cell)	1.4 m ²
45237 (12 diameter cartridge, 12-cell)	1.1 m ²
45244 (12 diameter cartridge, 9-cell)	0.85 m ²
45245 (12 diameter cartridge, 16-cell)	1.5 m ²
Z16P (16 diameter cartridge, 14-cell)	3.2 m ²
Z16H (16 diameter cartridge, 16-cell)	3.7 m ²
Z16H (16 diameter cartridge, 17-cell)	3.9 m ²

Table 4: Recommended Operating Parameters

Maximum Operating Pressure	BC25 Capsules	2.8 bar maximum inlet pressure, 2.4 bar maximum capsule pressure drop.
	BC1000/2000 Series Capsules	5.52 bar @ 25°C, 2.75 bar @ 60°C maximum inlet pressure; 2.4 bar maximum capsule pressure drop.
	Standard Zeta Plus Cartridges	2.4 bar maximum cartridge pressure drop.
Maximum Operating Temperature	BC25 Capsules	40°C
	BC1000/2000 Capsules	60°C
	Zeta Plus Cartridges	82°C
Recommended Pre-use Rinse		54 L/m ²
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 In situ steam sterilize 30 minutes @ 126°C (3 cycles)

Zeta Plus™ LA Series Low Aluminum Filter Media Ordering Guide

BC Capsules

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

8" Diameter Cartridges

Catalog Number	No. of Cells	Configuration	Material	Gasket Material	Packaging Code	Media Grade
Z8FA (8" Plug In Style)	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 LA 50 LA 60 LA 90 LA

Basic Cartridge Design	Gasket Material	Media Grade
45109 (8" - 8 Cell)	11 - Nitrile 13 - Fluorocarbon 14 - EPR	30 LA 50 LA 60 LA 90 LA
45167 (8" - 7 Cell) Plug In	01 - Nitrile 02 - EPR 03 - Fluorocarbon 04 - Silicone	

12" Diameter Cartridges

Basic Cartridge Design	Geometric Variation	Gasket Material	Media Grade
45320 ¹ (12" - 15 Cell) 45237 ¹ (12" - 12 Cell) 45244 ¹ (12" - 9 Cell) 45245 ¹ (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 LA 50 LA 60 LA 90 LA

16" Diameter Cartridges

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

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

² High Area Cell Count - 16 cells for grade 30 & 50; 17 cells for grade 60 & 90.

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. It is your responsibility to determine if additional testing or information is required and if this product is fit for a particular purpose and suitable in your specific application.

Limitation of Liability

3M Purification Pty Limited will not be liable, to the extent permitted by law, for any loss or damage from the use of the Product(s), whether direct, indirect, special, or consequential, regardless of the legal theory asserted, included warranty, contract, negligence or strict liability.



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