

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 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 prolongs final filter life.

Pharmaceutical Grade Media

Zeta Plus LA Series Filter Media is manufactured to procedures described in CUNO'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.



Applications

Pharmaceuticals Small & Large Volume Parenterals, Dialysates, Blood Fractions

Bioprocess Fluids

Food & Beverage Infant Formula & Foods

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 removal.

CUNO 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.

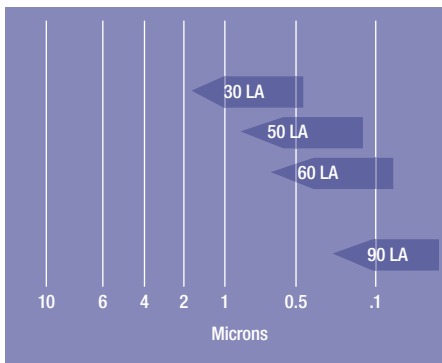
FDA Drug Master File and USP Class VI Biological Safety.

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

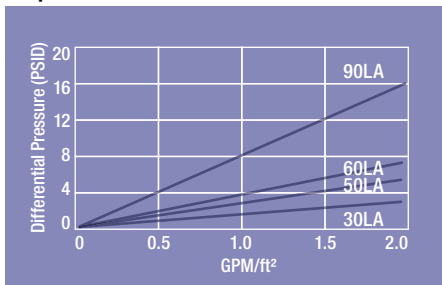
Self-contained, single-use disposable capsule and cartridge modules.

- Reduced labor time for changeouts and elimination of cleaning validation.

Chart 1: Media Grade Selection Guide



Graph 1: Water Flow Rate at 25°C



Grade Selection

Zeta Plus 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 filters. 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 CUNO Distributor or CUNO 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 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 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 compatibility, contact your local CUNO Distributor or CUNO Technical Support.

Filter Media Selection

Zeta Plus 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 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 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 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 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.

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

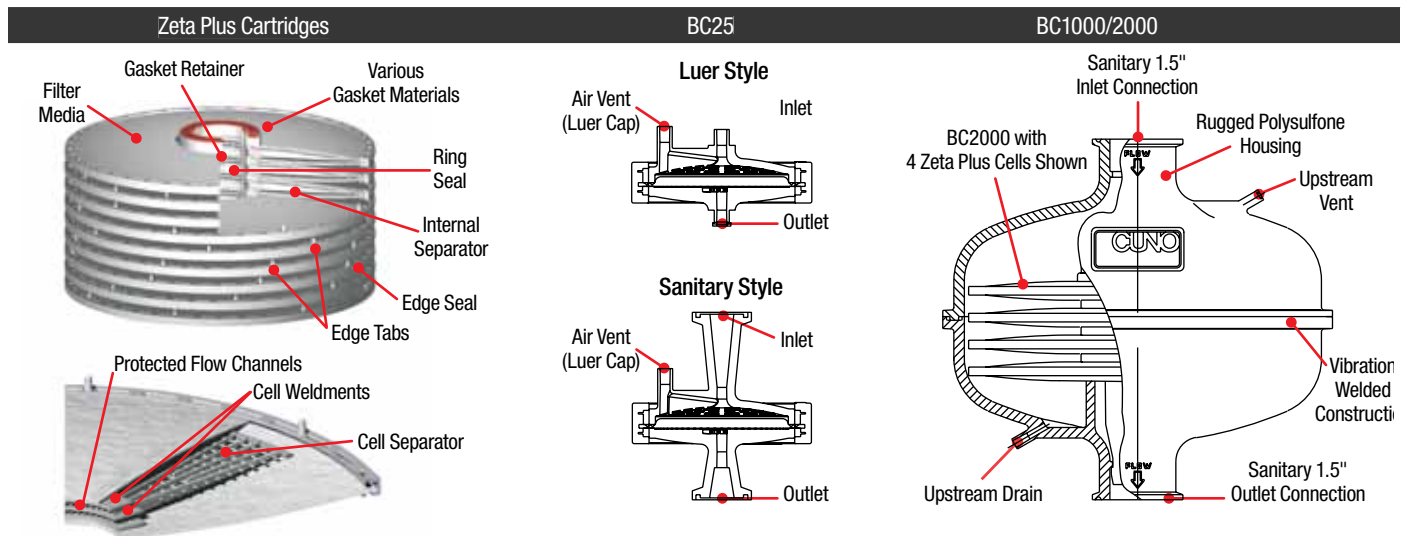
Table 4: Cartridge Configurations

Catalog Number	Nom. Diameter (Inches)	Height (Inches)	Number of Cells	Std. Pkg. Units/Cartridge
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 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)

*Patent Design (U.S. Patent Number 4,783,262)



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 BC Capsule Low Aluminum Series 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		

Important Notice

CUNO MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Since a variety of factors can affect the use and performance of a CUNO product in a particular application, some of which are uniquely within the user's knowledge and control, user is responsible for determining whether or not the CUNO product is fit for a particular purpose and suitable for user's method of application.

Zeta Plus 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 - Teflon-Encapsulated Viton	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 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 - Teflon	30-50-60-90	L - Inorganic Filter Aid & Cellulose	A - Low Aluminum

¹ Patent Protected 4,783,262

16" Diameter Cartridges

Basic Cartridge Design	Configuration	Gasket Material	Grade	Media	Control	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 - Teflon	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

Limitation of Remedies and Liability

If the CUNO product is proved to be defective, THE EXCLUSIVE REMEDY, AT CUNO'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OR TO REPAIR OR REPLACE THE DEFECTIVE PRODUCT. CUNO shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty or strict liability.

Warranty

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in

accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.



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