

Zeta Plus[®] Maximizer[™] H Series

Dual-Zone Depth Filter Cartridges



Food & Beverage



Zeta Plus Maximizer H Series are a family of advanced, dual-zone depth filters designed to provide optimal clarification and prefiltration in Food & Beverage applications. The patented* Zeta Plus Maximizer H filter design consists of two distinct layers, or "zones" of filter media with the upstream zone more open than the downstream zone. This structure enhances the contaminant holding capacity of the filter media, since larger particles are trapped in the upper zone of the filter media and smaller particles are trapped in the lower zone, reducing premature plugging and extending service life. The two filter zones can be independently selected and combined to optimize performance.

Applications

The Maximizer H series is ideally suited for clarification and prefiltration in food and beverage, cosmetic, and general applications where the exceptional high wet-tensile strength media,

combined with the innovative dual-zone design, provides extended service life. These include aqueous, alcoholic, proteinaceous, and acidic solutions.

Typical Applications

- Beer
- Wine
- Spirits
- Syrups
- Edible Oils
- Flavor Concentrates
- High Fructose Corn Syrup
- Nutraceuticals

Superior Particle Removal

Zeta Plus Maximizer H filter medium offers unique advantages in contaminant removal by combining mechanical entrapment with electrokinetic adsorption. Larger particulate and hazes are mechanically entrapped in the depth of the media, while negatively charged particles, such as bacteria, yeast, and sub-micronic hazes, are adsorbed to the positively charged Zeta Plus filter media.

Chemical Compatibility

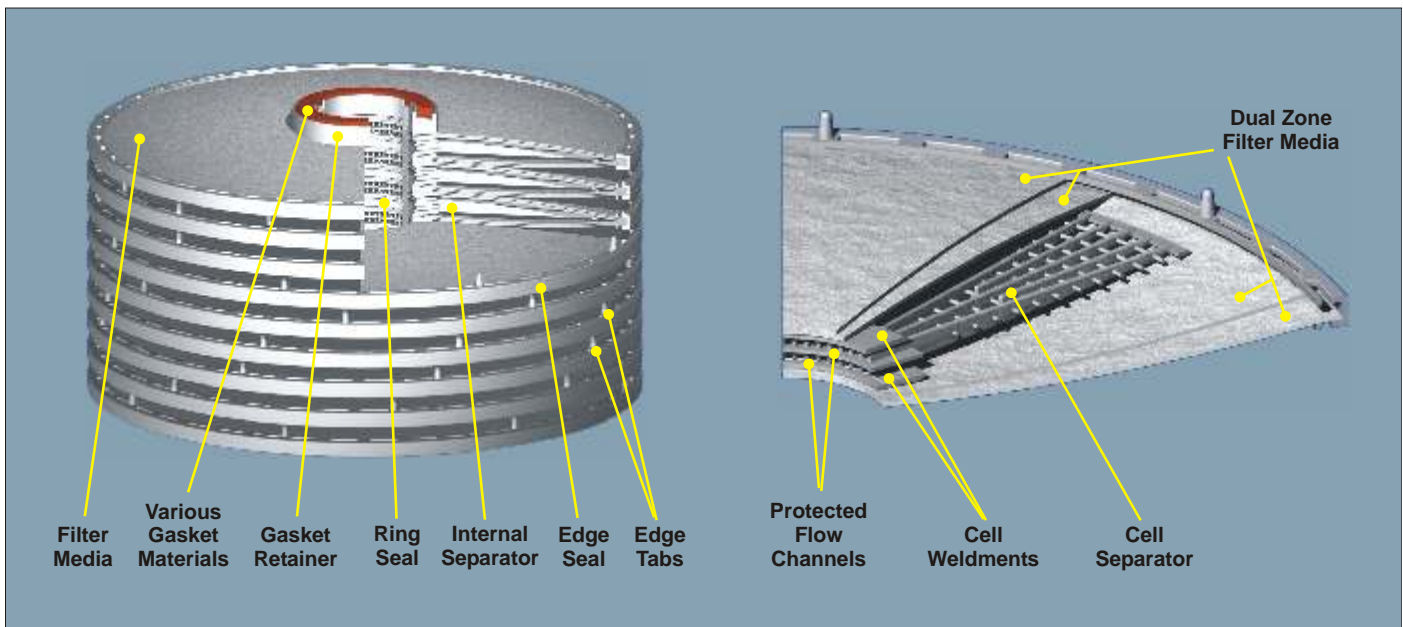
Compatibility with various chemicals is indicated in the table below. It is recommended that Zeta Plus media be tested in the product under standard process conditions to confirm compatibility prior to use. All tests have been carried out at ambient temperature (20°C) unless otherwise indicated.

PRODUCT	COMPATIBILITY
Acetic Acid up to 20%	Satisfactory
Ethanol up to 98%	Satisfactory
Hypochlorite	Not recommended
Hydrogen Peroxide *	Satisfactory
Nitric Acid	Not recommended
Peracetic Acid*	Satisfactory
Sodium Hydroxide 2%	Not recommended
Sugar solution 10%	Satisfactory
Water up to 90°C	Satisfactory

* As found in commonly used sanitizing agents. Contact your local CUNO representative for advice on maximum recommended concentration.

Features	Benefits
■ Maximizer H Series dual-zone filter media construction	■ Higher throughput, lower processing costs, smaller filter assemblies
■ Wide range of upstream/downstream combinations	■ Potential to condense two stages of filtration into one
■ High tensile strength media	■ Customizable to meet product needs
■ Full range of cartridge and capsule configurations	■ Withstands the rigors of hot water, steam, and chemicals for longer service life
■ Totally enclosed system	■ Scalable from laboratory to full production
	■ Eliminates leakage and external contamination common with filter sheets

*U.S. Patent Numbers 4,783,262; 4,881,313; 5,055,192 and patents pending.



CUNO's unique dual zone filter media and cell separator ensure fast flow rates, lower pressure drops, and greater throughputs.

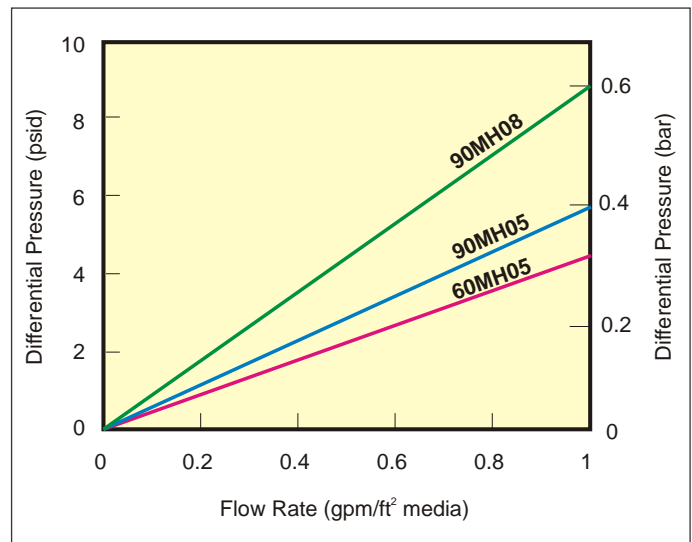
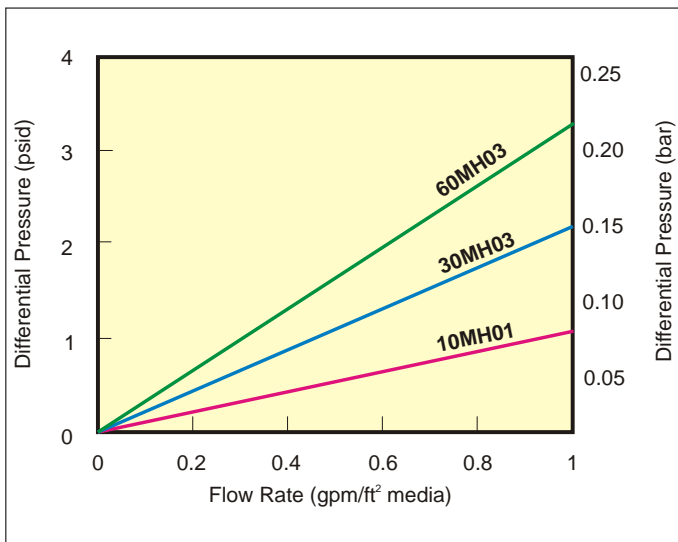
Cartridge Construction

Zeta Plus Maximizer H Series cartridges are designed for use with CUNO Zeta Plus sanitary style stainless steel filter housings. Cartridges are constructed from individual cells of Zeta Plus Maximizer H filter medium assembled together with polypropylene separators under predetermined compression and unitized by three, 316 stainless steel bands. Each cell is constructed using polypropylene molded edge seals and separators for high performance. Various gasket materials are available depending upon the application. Filter cartridges are available in 8, 12, and 16-inch diameters, with surface area ranging from 0.7 ft² to 42.2 ft² per cartridge. All components are listed in 21CFR as safe for food contact.

Flow Rates

The graphs below display flow rates obtained with 20°C clean water. Optimum flow rates vary by application, but in general, the flow rate per unit area (flux) should not exceed 0.25 gpm/ft² (10 lpm/m²) of filter media in beer and 0.5 gpm/ft² (20 lpm/m²) in wine or similar beverage for best performance. Lower flux rates often result in longer service life, greater throughputs and superior system economics.

FLOW vs. DIFFERENTIAL PRESSURE

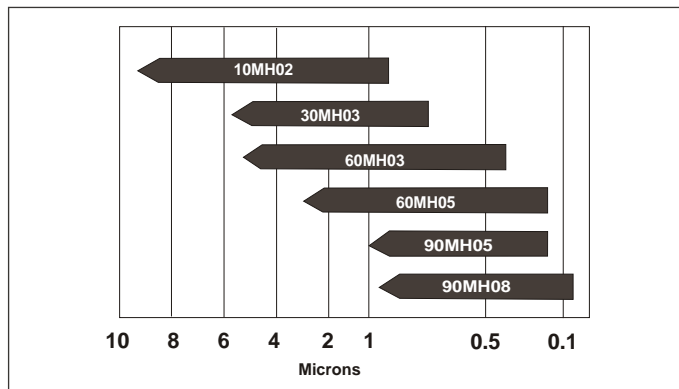


GRADE SELECTION

Zeta Plus Maximizer H Series filter media are available in nine standard grade combinations. The chart below is provided as a guide to correct grade selection based on nominal retention ratings and can be used in conjunction with the recommendations in Table 1 to determine the appropriate filter grade for your application. Operating conditions and the fluid being filtered impact retention performance. Small-scale pilot runs with BioCap® capsules can be performed to confirm grade selection prior to scale-up. CUNO's Scientific Applications Support Services (SASS) staff can assist in grade selection as well as assist with on-site evaluations. Filter system optimization can also be conducted at CUNO's laboratory facilities.

Rough clarification (particles, haze)	10MH01, 10MH02
Rough clarification (yeast, haze)	30MH02, 30MH03
Polishing clarification/membrane prefiltration (yeast, haze, bacteria)	60MH03, 60MH05
Bioburden removal (haze, bacteria)	70MH05, 90MH05, 90MH08

NOMINAL RETENTION RATINGS



Sanitary Filter Housings

CUNO provides a wide array of standard and custom designed sanitary filter housings to accommodate Zeta Plus Maximizer H Series filter cartridges. All housings are designed with the food and beverage industries in mind and feature 316L mirror-polished surfaces and easy-to-clean components, along with accessories such as CIP spray-balls and the innovative ZetaGrip® cartridge lifting device. Custom design skid systems incorporating Zeta Plus and membrane cartridge filter housings, together with process piping, flow control and complete validation documentation (IQ, OQ), are also available.

Table 2. RECOMMENDED OPERATING PARAMETERS

Maximum Temperature:	176°F (80°C)
Hot Water Sanitization:	194°F (90°C)
Change-out Differential Pressure:	35 psid (2.4 bar)
Recommended Flow Rate*:	0.25 - 0.5 gpm/ft. ² (10 - 20 lpm/m ²)
Maximum Flow Rate:	1.0 gpm/ft. ² (40 lpm/m ²)
Rinse Volume:	1.25 gallons/ft. ² (50 liters/m ²)
*Consult CUNO for the best flow rate for your application.	

Table 3 references the nominal effective filtration area of Zeta Plus Maximizer H Series capsules and cartridges. For scale-up evaluations, it is strongly recommended that customers contact CUNO Scientific Application Support Services (SASS) for assistance.

Table 3. NOMINAL EFFECTIVE FILTRATION AREA

BC0030A (Single Filter)	3.7 in. ² (24 cm ²)
BC1000A (Single Filter)	0.7 ft. ² (650 cm ²)
BC2000A (Single Filter)	1.4 ft. ² (1300 cm ²)
45109 (8" diameter, 8 cell)	2.8 ft. ² (0.26 m ²)
45167 (8" diameter, 7 cell O-ring plug-in)	2.5 ft. ² (0.23 m ²)
45244 (12" diameter, 9-cell)	9.2 ft. ² (0.90 m ²)
45237 (12" diameter, 12-cell)	12.3 ft. ² (1.1 m ²)
45245 (12" diameter, 16-cell)	16.4 ft. ² (1.5 m ²)
Z16P (16" diameter, 14-cell)	34.7 ft. ² (3.2 m ²)
Z16H (16" diameter, 16/17 cell) see ** page 4	39.7/42.2 ft. ² (3.7/3.9 m ²)



Zeta Plus BioCap® filters are ideal for pilot scale and low volume applications.



Zeta Plus Maximizer H Series Ordering Guide

8" Diameter Cartridges

Catalog Number	Gasket Material	Grade
45109 (8", 8 cell)	11 - Nitrile	10MH01
	13 - Fluorocarbon	10MH02
	14 - EPR	30MH02
	22 - Silicone	30MH03
	23 - Teflon	60MH03
45167 (8", 7 cell, O-ring Plug-in)	01 - Nitrile	60MH05
	02 - EPR	60MH05
	03 - Fluorocarbon	70MH05
	04 - Silicone	90MH05
	09 - Teflon Encapsulated Viton	90MH05
		90MH08

12" Diameter Cartridges

Catalog Number	Geometric Variation	Gasket Material	Grade
45237 (12", 12 cell) 45244 (12", 9 cell) 45245 (12", 16 cell)	01 - Standard Polypropylene	A - Silicone	10MH01
		B - Fluorocarbon	10MH02
		C - EPR	30MH02
		D - Nitrile	30MH03
		E - Teflon	60MH03
			60MH05
			70MH05
			90MH05
			90MH08

16" Diameter Cartridges

Catalog Number	Gasket Material	Grade	Optional Lifting Handle*
Z16P (16", 14 cell)	A - Silicone	10MH01	H
	B - Fluorocarbon	10MH02	
	C - EPR	30MH02	
	D - Nitrile	30MH03	
	E - Teflon	60MH03	
Z16H** (16", 16/17 cell)		60MH05	
		70MH05	
		90MH05	
		90MH05	
		90MH08	
		90MH08	

BioCap Series Ordering Guide

Catalog Number	Grade
BC0030A (Single Filter)	10MH01 60MH05
BC0030B (10 Filter Pak)	10MH02 70MH05
BC1000A (Single Filter)	30MH02 90MH05
BC1000B (3 Filter Pak)	30MH03 90MH08
BC2000A (Single Filter)	60MH03
BC2000B (3 Filter Pak)	

Your local CUNO distributor is:

* Omit "H" suffix from part number if lifting handle is not required

** Z16H design contains 17 cells for 90MH08, 90MH05, 70MH05, and 60MH05, and 16 cells for 60MH03, 30MH03 and 30MH02. 10MH02 and 10MH01 are available only in 14 cell configuration.

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.

Service Worldwide

Visit us at www.cuno.com for more information
about CUNO Products or the location of your local sales office



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