



## ZETA PLUS® HT SERIES

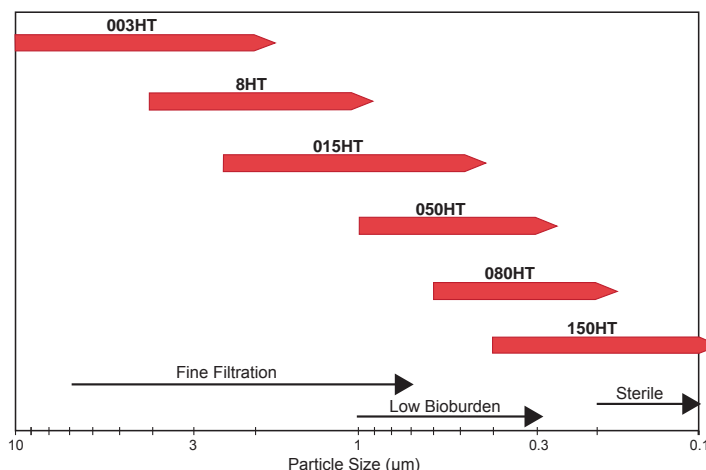


Zeta Plus® HT filter media is made from inorganic filter aids, refined cellulose and cationic resin.

### GRADE CHOICE

The Zeta Plus® HT series filter media are available in several grades, that meet the different filtration needs required by your applications. Nominal filtration ratings are given in the following table for the various grades. The optimal filtration system for your particular application can be determined by on-site testing or by sample evaluation by a member of our Scientific Application Support Services group (SASS).

Zeta Plus® HT : Filtration Grades



### Applications

- Beverage, spirits
- Food Products
- Fine Chemicals
- Oral products
- Cosmetics
- Water treatment

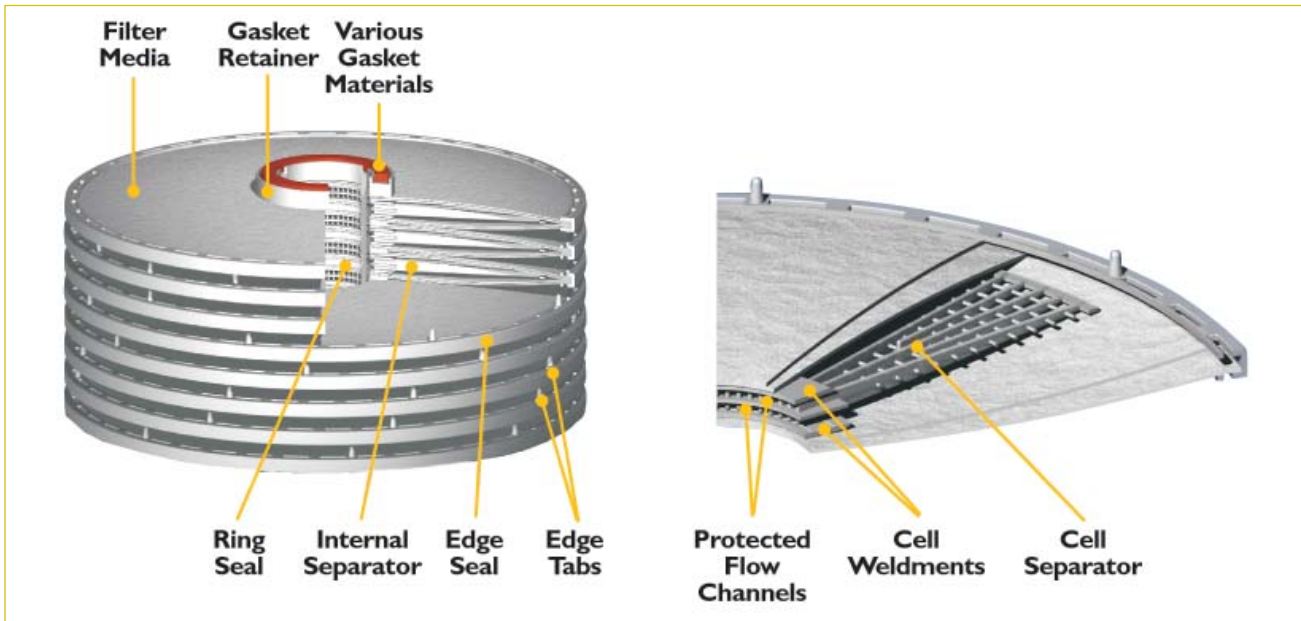
### Features

- More than three times the strength of competitive media to withstand multiple steaming and hot water sanitisation cycles.
- Combined depth filtration and electrokinetic adsorption.
- Easy-to-install cartridges for rapid change-out.
- Totally enclosed, sanitary systems and housings.
- Variety of cartridge sizes and filtration surface areas.
- All components FDA CFR Title 21 listed.

### Benefits

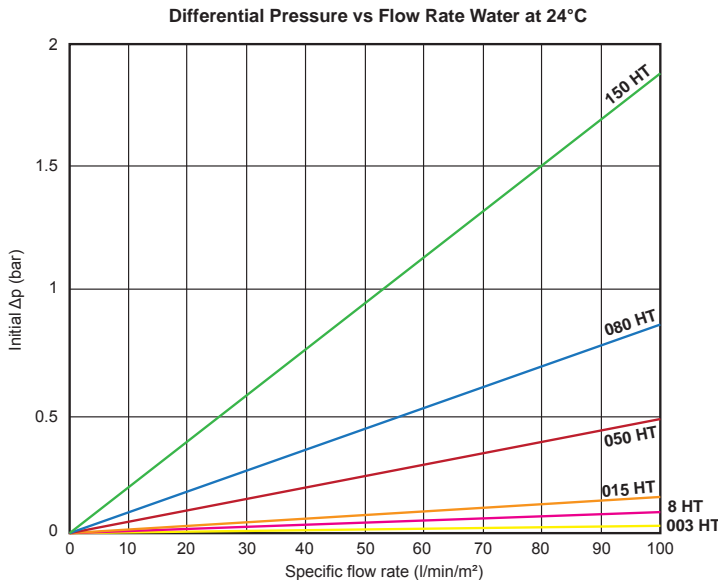
- Extended filter life resulting in high throughputs, fewer cartridge change-outs, and reduced operating costs.
- Efficient haze and particle removal at micron ratings smaller than the mechanical rating alone.
- Reduced labour cost.
- Zero edge leakage and external contamination.
- Flexible options for all flow requirements.
- Safe for all food & beverage filter applications.

## CARTRIDGE CONSTRUCTION :



## CARTRIDGE CONSTRUCTION

Zeta Plus® HT cartridges are constructed from individual cells. Each cell is constructed using polypropylene molded edge seals and internal separators for high performance. The cells are made into a single unit by three 316 stainless steel bands in the core of the cartridge with polypropylene cell separators. Various gasket materials are available depending upon application. Filter cartridges are available in 8, 12 and 16-inch diameters.



## FLOW RATE CHARACTERISTICS

The graph shows initial  $\Delta p$  values for Zeta Plus® HT series filter media versus specific flow rates (l/min/m<sup>2</sup>), obtained with clean water.

## QUALITY CONTROL

The Zeta Plus® HT cartridges are manufactured following an ISO 9000 quality certified assurance scheme. All the cartridges are labelled with a lot identification number to provide complete traceability. Moreover, each cartridge is graved with its lot number and grade assuring total traceability.

## MAXIMUM PARTICLE REMOVAL EFFICIENCY

Particle removal efficiency on 8 HT (at pH = 4) media tested by particle challenge, after 3 minutes (initial step) or 60 minutes (final step). Table left gives the 8 HT turbidimetric efficiency (at pH = 4) according to the quantity of particles added.

Particles ACFTD in gram	Turbidimetric %
0.02	96.40
0.06	96.40
0.28	97.60

Particle size ACFTD (µm)	Efficiency at initial step (%)	Efficiency at final step (%)
1.712	99.58	99.78
2.137	99.80	99.82
12.601	100	100

CHEMICALS	HT	GASKETS			
		Nitrile	Fluoro carbone	Ethylene Propylene	Silicone
Acetic Acid 5%-20%	G	G	G	G	G
Acetone 100%	G	P	G	G	G
Benzene	G	P	F	P	F
Carbon Tetrachloride	G	F	G	P	F
Chloroethylene	G	P	G	P	F
Chloroform - Dry	G	P	G	P	F
1,4 - Dioxane	G	P	P	P	P
Ethanol 10% and 50%	G	G	F	G	G
Ethyl Acetate	G	P	P	P	F
n-Heptane	G	G	G	P	F
Hexane	G	G	G	P	F
1.1.1 - Trichloroethane	G	P	G	P	F
Methanol	G	G	P	G	G
Methyl Ethyl Ketone (MEK)	G	P	P	G	G
Methyl Isobutyl Ketone (MIBK)	G	P	P	G	G
Sodium Hydroxide 20%	F-P	F	G	G	G
Toluene	G	P	G	P	F
Water (25°C and 82°C)	G	G	G	G	G

*Explanation of ratings:*  
**G** = Satisfactory - to maximum 82°C (unless restriction is noted).  
**F** = Fair  
**P** = Not recommended.

## COMPATIBILITY

The gaskets compatibility with different chemicals is indicated in the table on the left. It is advisable to test a product under service conditions simulating service conditions. *These recommendations are intended as a guide only.*

## EXTRACTABLES CONTENT

Table below gives as an example values for calcium and iron in 3 different extracting solutions due to soak testing. Moreover, specific rinsing procedures can be developed on-site for special applications.

		GRADE				
		8 HT	015 HT	050 HT	080 HT	150 HT
Demineralised water	Calcium (ppm)	0.18	0.09	0.12	0.13	0.15
	Iron (ppb)	<5.0	<5.0	<5.0	<5.0	5.27
Ethanol 8%	Calcium (ppm)	0.26	0.09	<0.08	<0.08	0.09
	Iron (ppb)	<5.0	<5.0	<5.0	<5.0	<5.0
Ethanol 50%	Calcium (ppm)	0.10	<0.08	<0.08	<0.08	<0.08
	Iron (ppb)	<5.0	<5.0	<5.0	<5.0	<5.0

## MICROORGANISMS RETENTION

Zeta Plus® HT	Microorganisms used for challenge	Retention efficiency (%)
015 HT	Saccharomyces cerevisae (ATCC - 36026)	> 99.99
050 HT		> 99.99
080 HT		> 99.99
080 HT	OEnococcus oenii (ATCC - 23279)	> 99.99
150 HT		> 99.99
080 HT	Brevundimonas diminuta (ATCC - 19146)	> 99.99
150 HT		> 99.99

Test conditions :

- specific flow rate : 635 l/h/m<sup>2</sup>
- initial micro-organism concentration: 108 organisms/cm<sup>2</sup> of media.

The results show the retention efficiency of Zeta Plus® HT series filter.

## RECOMMENDED OPERATING PARAMETERS

<b>Maximum Operating Pressure</b>	<i>Standard and Special precoat Zeta Plus® Cartridges : 2.4 bar maximum cartridge pressure drop.</i>
<b>Maximum Operating Temperature</b>	<i>Standard and Special precoat Zeta Plus® Cartridges : 82°C.</i>
<b>Recommended Pre-use Rinse</b>	54 l/m <sup>2</sup> @ 20 lpm/m <sup>2</sup>
<b>Sterilization Parameters</b>	<i>Standard and Special precoat Zeta Plus® Cartridges : autoclave or in-situ steam sterilisation for 1 hour at 121° C.</i>
<b>Operating FLUX range</b>	1.2 - 12 lpm/m <sup>2</sup>

Consult you local CUNO representative at 3M or Distributor for the best flow rate for your application.

## ZETA PLUS® HT SERIES - ORDERING GUIDE

### CARTRIDGES

ZETA PLUS®	DIAMETER (inch)	CARTRIDGE DESIGN	GASKET TYPE	GRADE	FORMULATION
Z	08	P - Plug-in 7 cells 0.23 m <sup>2</sup>	Standard: A - Silicone (MVQ)*	003 8 015 050 080 150	HT
		D - Standard 8 cells 0.26 m <sup>2</sup>			
Z	12	C - 9 cells / small 0.85 m <sup>2</sup>	D - Nitrile (NBR)*		
		B - Special precoat 12 cells 1.1 m <sup>2</sup>	Options: A - Silicone (MVQ)*		
		D - Standard 16 cells 1.5 m <sup>2</sup>	B - Fluorocarbon (FPM)*		
Z	16	S - Special 7 cells 0.7 m <sup>2</sup>	C - EPR (EPDM)*		
		M - Standard diffusion netting 14 cells - 3.2 m <sup>2</sup>			
		D - Standard 15 cells - 3.4 m <sup>2</sup>			
		S - Special precoat 9 cells 2.1 m <sup>2</sup>	<i>*ISO Designation</i>		

### SCIENTIFIC APPLICATIONS SUPPORT SERVICES (SASS)

CUNO's Scientific Applications Support Services (SASS) is staffed by scientists and engineers, with state-of-the-art laboratory facilities. The SASS staff, familiar with a wide range of filtration and separation applications, work closely with the customer to recommend the most effective and economical CUNO filtration systems.

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