

Zeta Plus™ H Series Filter Sheets

Zeta Plus™ H Series is a charge-modified depth filter sheet constructed with high-tensile strength media to perform efficiently even under operating conditions requiring elevated operating temperatures or repeated hot water sanitation cycles.

Product Composition

Zeta Plus H Series filter sheets are composed of select inorganic filter aids and cellulose fibers processed with a resin system.

Superior Particle Removal

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

Grade Selection

Zeta Plus H Series filter media are available in a broad range of grades. Mechanical straining alone, as determined by mean-flow pore analysis, is indicated in Figure 1. Particles smaller than the rated pore size will be removed by Zeta Plus H Series filter media because of electrokinetic adsorption. Actual operating conditions and the product to be filtered should be considered in grade selection. Technical support in optimal grade selection is provided by your local Master Representative/Distributor or by the 3M Purification Inc. Application Engineering team.

Superior Strength and Resistance

Zeta Plus H Series filters are specifically designed for applications requiring numerous hot water sanitation cycles or extended exposure to high service temperatures. The superior wet tensile strength of Zeta Plus H Series media ensures integrity under flow and pressure variations where poorly designed competitive products suffer media erosion, deformation and bypass.

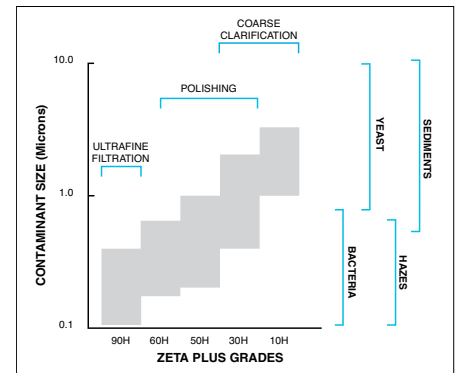
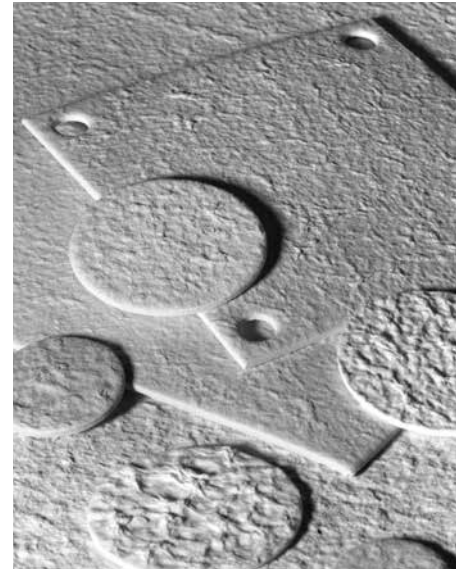


Figure 1 — Grade Selection

Features & Benefits

More than three times the strength of competitive media to withstand multiple steaming and hot water sanitization cycles

- Extended filter life resulting in high throughputs, fewer change-outs and reduced operating costs

Combined depth filtration and electrokinetic adsorption

- Efficient haze and particle removal at micron ratings smaller than the mechanical rating alone

All components FDA CFR Title 21 listed

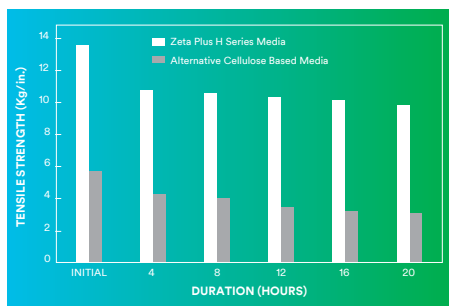
- Safe for all food & beverage filter applications

Applications

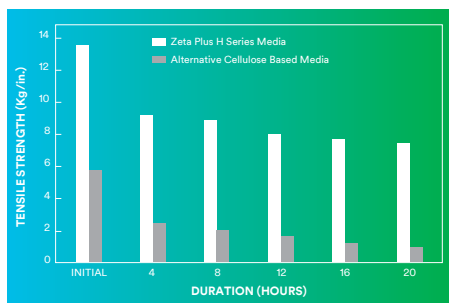
Clarification of:

- Beer
- Concentrates
- Flavors
- Oils
- Spirits
- Syrups
- Vinegar
- Wine

Graph 1. 90°C Water Exposure



Graph 2. 135°C Steam Exposure



Graphs 1 and 2 depict the significant media strength advantage that Zeta Plus H Series media holds over alternative cellulose based media in resistance to 90°C water and 135°C steam.

High Performance in Microbial Reduction

Zeta Plus H Series media demonstrate excellent microbial reduction as noted in Table 1. No organisms were detected downstream of the Zeta Plus H Series media after filtration. This confirms the effectiveness of Zeta Plus H Series media in protection of final membrane filters and in producing a microbiologically stable product when used alone.

Table 1: Microbial Reduction

Zeta Plus H Series Media Grade	Microorganism Used For Challenge	Removal (CFU/cm of Media)	Organisms in Filtrate
30H	<i>Saccharomyces cerevisiae</i> (ATCC-36026)	4.1 × 10 ⁸	0
50H		6.8 × 10 ⁸	0
60H		6.0 × 10 ⁸	0
60H	<i>Oenococcus oeni</i> (ATCC-23279)	5.5 × 10 ⁸	0
90H		7.2 × 10 ⁸	0
60H	<i>Brevundimonas diminuta</i> (ATCC-19146)	9.7 × 10 ⁸	0
90H		1.3 × 10 ⁸	0

Challenge conditions used in these tests:

Microbial concentration 10⁶–10⁷ organisms/mL

Flow Rate 0.25 gpm/ft.² (10 L/min/m²)

Low Extractables

Calcium and iron extractable concentrations of Zeta Plus H Series media in a variety of solutions are shown in Table 2. The data represent a static soak of the media in the listed fluid at a ratio of 10mL of fluid/1 gram of media (approximately 1.2 liter/ft.²). Even at this high ratio of media weight to soak volume, the results show extremely low extractable levels. As a Good Manufacturing Practice, 3M Purification Inc. recommends a 1.25 gallon/ft.² (50/m²) flush of H series media with either filtered water or product prior to use. More over, specific rinsing procedures can be developed on-site for special applications to reduce these levels even further.

Table 2: Extractables

		Media Grade				
		10H	30H	50H	60H	90H
D.I. Water	Calcium (ppm)	0.18	0.1	0.12	0.13	0.15
	Iron (ppm)	<0.005	<0.005	<0.005	<0.005	<0.005
8% Ethanol	Calcium (ppm)	0.26	0.9	<0.08	<0.08	0.09
	Iron (ppm)	<0.005	<0.005	<0.005	<0.005	<0.005
50% Ethanol	Calcium (ppm)	0.10	<0.08	<0.08	<0.08	<0.08
	Iron (ppm)	<0.005	<0.005	<0.005	<0.005	<0.005

Flow Characteristics

Graphs 3 and 4 show initial differential pressure values for Zeta Plus H series media versus specific flow rates in water and a 10 cst viscosity oil, respectively.

Filter Sheet Dimensions

Zeta Plus H Series filter sheets are available in a wide range of cut discs and squares to accommodate almost any filter press requirements. Please consult 3M Purification Inc. or your local distributor for more information.

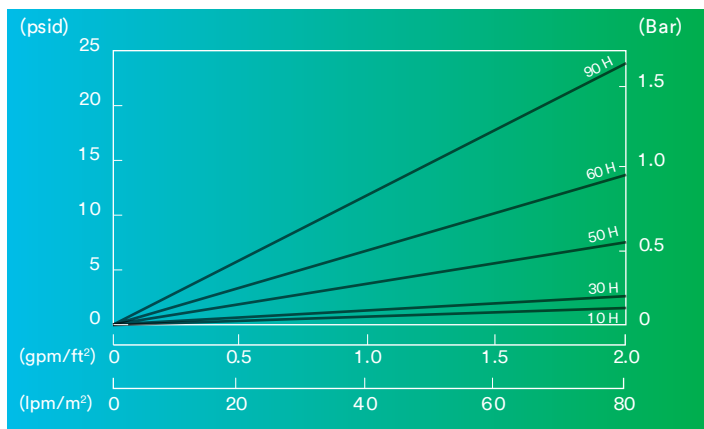
Zeta Plus H Series filter media are also available in a wide range of convenient cartridges and totally enclosed filter housings. For more information on Zeta Plus H Series filter systems, please request 3M Purification Inc. literature 70-0201-8856-4.

3M Purification Inc. provides a wide array of filter options for breweries and wineries. For more information, please request 3M Purification Inc. literature 70-0201-8679-0 (beer) and 70-0201-8684-0 (wine).

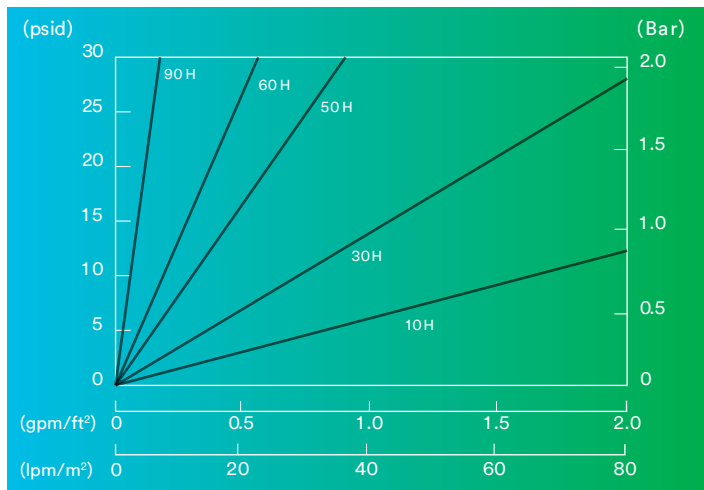
ISO 9001 Registered Quality Management System

Zeta Plus H Series filters are manufactured under an ISO 9001 registered quality management system. The quality system ensures that the appropriate standards are met or exceeded to provide consistently high quality products.

Graph 3. Zeta Plus H Series Water Flow



Graph 4. Zeta Plus H Series 10cst Oil Flow



Technical Information

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