emp BIOTECH

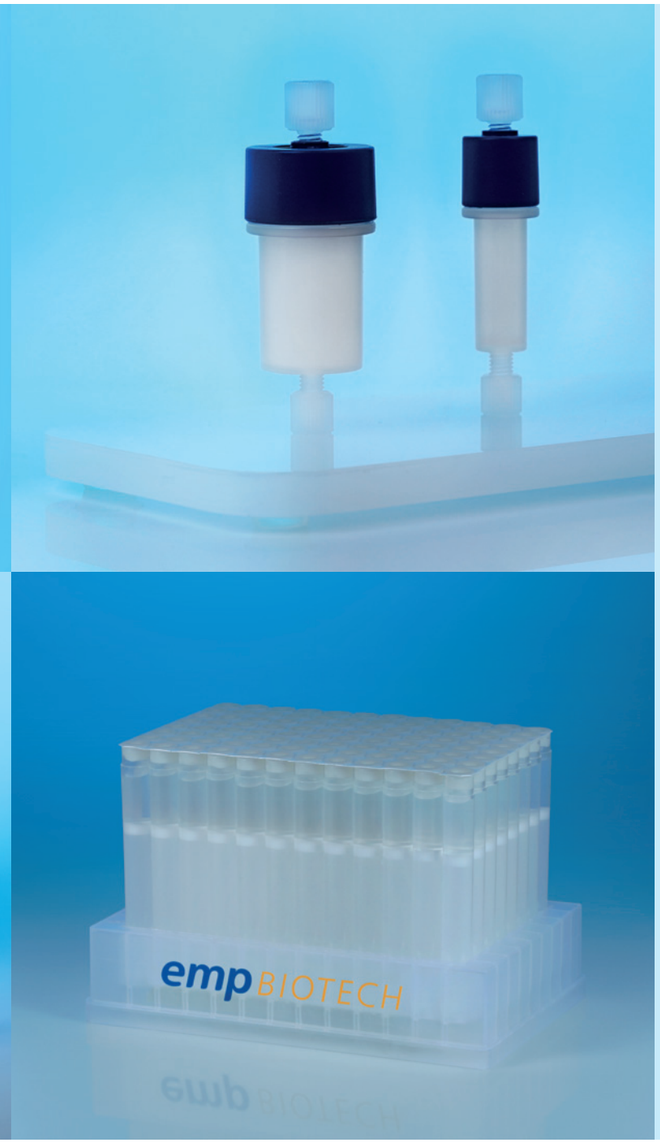
Zetadex Gel Filtration

for rapid purification, desalting, and buffer exchange

excellence made possible

Zetadex Gel Filtration

For rapid purification, desalting, and buffer exchange



Zetadex
Gel Filtration Resin

Zetadex is a beaded composite material developed by ***emp*** *BIOTECH* and comprised of ultrapure cross-linked dextran. It exhibits high selectivity, superb resolution, low non-specific adsorption and robust chemical stability. Buffer and pH effects on resolution are minimal.

Molecules purified with **Zetadex** are separated according to size. Molecules and particles larger than the pores are excluded from entering the beads, remain in the void volume, pass rapidly through the column, and are eluted free from low molecular weight contaminants.

The main advantage of **Zetadex** is the ability to rapidly remove small molecules and to simultaneously desalt the sample into pure water. If **Zetadex** is pre-equilibrated with a particular buffer, then the sample undergoes rapid buffer exchange directly into the buffer of choice.

Zetadex Gel Filtration Resin Overview

There are currently two grades of **Zetadex**, **Zetadex-25** and **Zetadex-50**, which have distinct separation characteristics arising from different degrees of cross-linking. The size exclusion or molecular weight cut-off (MWCO) of **Zetadex-25** is 5 kDa for proteins and 10 bases for nucleic acids. For **Zetadex-50**, the cut-offs are 25 kDa and 20 bases, respectively.

The particle size distribution (PSD) of **Zetadex** is precision controlled by a process developed at ***emp** BIOTECH*. The PSD determines the flow rate through the gel bed and it is important to choose the best PSD for the intended application.

Zetadex resins are divided into four categories:

Grade	Particle Size (dry)	System Compatibility	Products
Superfine	20 – 50 µm	– Centrifuge – Automated liquid chromatography systems – Peristaltic pump – Syringe	ZetaSpin columns ZetaPlate plates ZetaSep FPLC columns Dry resin Hydrated resin
Fine	20 – 80 µm	– Centrifuge – Automated liquid chromatography systems – Peristaltic pump – Syringe	ZetaPrep FPLC columns Dry resin Hydrated resin
Medium	50 – 150 µm	Gravity flow	CentriPure columns CentriPure Arrays Dry resin Hydrated resin
Coarse	150 – 250 µm	Process chromatography	Dry resin

Zetadex is autoclavable at 121°C, pH 7 for 30 minutes and is stable in all commonly used buffers.

Grade	Zetadex-25	Zetadex-50
Superfine	Dry Bead Size: 20 – 50 µm (>80 %) **Product Code: TM-0101**	Dry Bead Size: 20 – 50 µm (>80 %) **Product Code: TM-0104**
	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **on request**	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0121**
	Hydrated in deionized water with 0.15 % ProCline **on request**	Hydrated in deionized water with 0.15 % ProCline **Product Code: TM-0122**
Fine	Dry Bead Size: 20 – 80 µm (>80 %) **Product Code: TM-0102**	Dry Bead Size: 20 – 80 µm (>80 %) **Product Code: TM-0105**
	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0130**	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0108**
	Hydrated in deionized water with 0.15 % ProCline **Product Code: TM-0129**	Hydrated in deionized water with 0.15 % ProCline **Product Code: TM-0123**
Medium	Dry Bead Size: 50 – 150 µm (>80 %) **Product Code: TM-0103**	Dry Bead Size: 50 – 150 µm (>80 %) **Product Code: TM-0106**
	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0107**	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0132**
	Hydrated in deionized water with 0.15 % ProCline **Product Code: TM-0114**	Hydrated in deionized water with 0.15 % ProCline **Product Code: TM-0131**
Coarse	Dry Bead Size: 100 – 300 µm (>80 %) **Product Code: TM-0112**	Dry Bead Size: 100 – 300 µm (>80 %) **Product Code: TM-0113**
Agglutination Grade (Gel Card)	–	Dry Bead Size: 20 – 50 µm (>80 %) **Product Code: TM-0111**
	–	Hydrated in phosphate buffered saline pH 7.4, with 0.02 % NaN_3 **Product Code: TM-0120**
	–	Hydrated in deionized water with 0.15 % ProCline **on request**
Water Regain: Swelling: MWCO (size exclusion): Fractionation Range:	2.15 – 2.25 mL/g 4 – 6 mL/g below 5000 Da 1 – 5 kDa (globular proteins)	4.80 – 5.20 mL/g 9 – 11 mL/g below 25000 Da 1 – 30 kDa (globular proteins)

GRAVITATIONAL FLOW

CentriPure

Hydrated Gel Filtration Columns

For rapid purification, desalting, and buffer exchange using gravity flow

CentriPure Gel Filtration Columns are specifically designed for rapid and efficient removal of small molecules (dyes, salts, biotin, haptens, etc.) from larger proteins, nucleic acids, or nanoparticles, which are simultaneously purified and desalted in a single step.

Ultrapure gel and specially treated sinter frits ensure outstanding resolution, low cross-contamination and high selectivity.

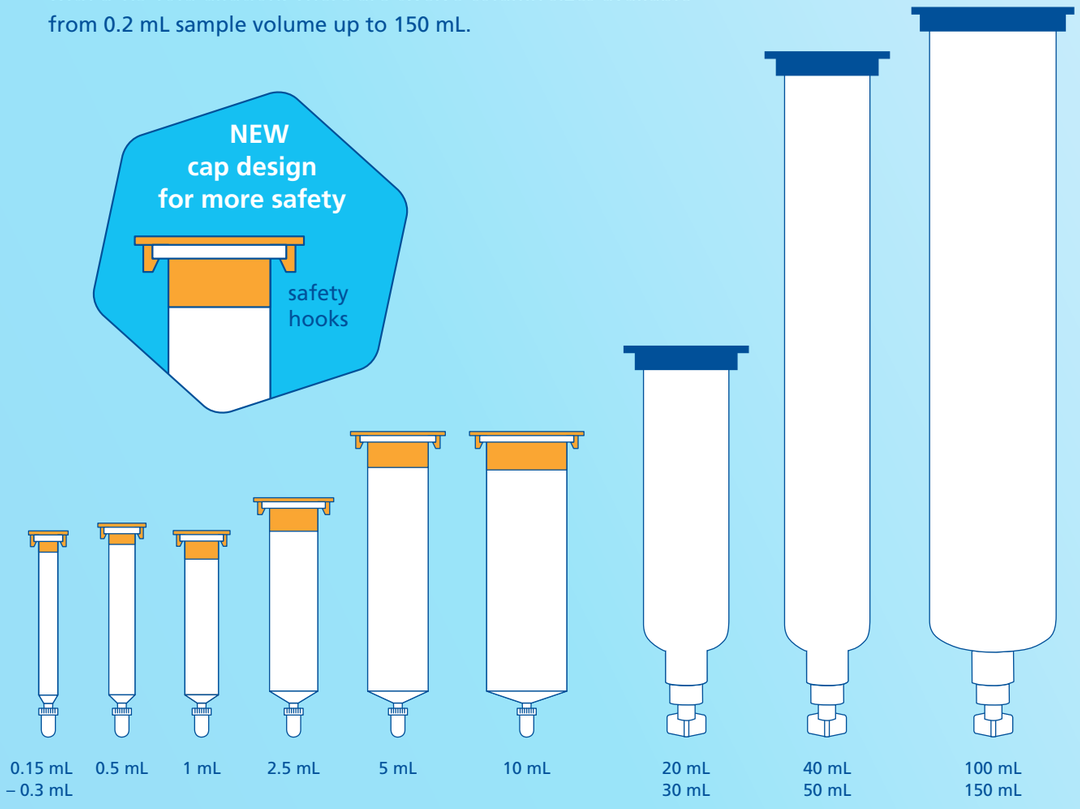
CentriPure columns are precision filled with **Zetadex Medium**, which has been optimized for gravity flow chromatography. **CentriPure** columns can be pre-washed with pure water for desalting or pre-equilibrated with a buffer of choice for a customized buffer exchange. The gravity column provides a significantly faster and far more efficient alternative to lengthy dialysis.

CentriPure columns process fixed sample volumes and elute with a 1.5-fold dilution. There are twelve column sizes available for the following fixed sample volumes: 0.2 mL, 0.5 mL, 1 mL, 2.5 mL, 5 mL, 10 mL, 20 mL, 30 mL, 40 mL, 50 mL, 100 mL and 150 mL.

CentriPure
Configuration Line Up
pre-filled and ready-to-use

GRAVITATIONAL FLOW

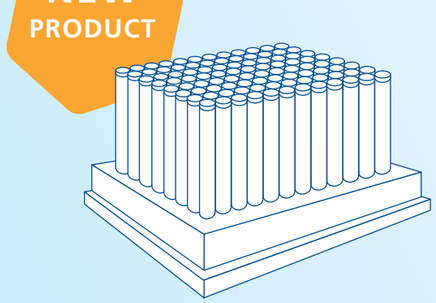
CentriPure Columns process fixed sample volumes and elute with a 1.5-fold dilution. There are twelve column sizes available from 0.2 mL sample volume up to 150 mL.



GEL FILTRATION RESIN

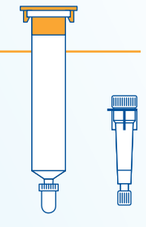
GRAVITATIONAL FLOW

CentriPure Arrays for automated systems
sample volume: 150 – 500 µL

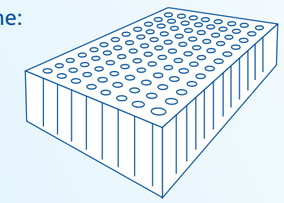


CENTRIFUGATION

ZetaSpin Columns
sample volume: 500 µL
sample volume: 50 µL

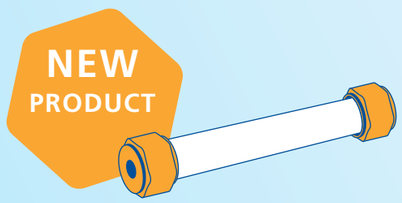


ZetaPlate Plates
sample volume:
up to 40 µL

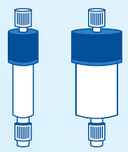


LIQUID CHROMATOGRAPHY SYSTEMS

ZetaPrep FPLC Columns
bed volume: 20 mL



ZetaSep FPLC Columns
bed volume: 1/5 mL



CentriPure Z25
Gel Filtration Columns

For rapid desalting and buffer exchange
- of oligonucleotides longer than 10 base pairs/nucleotides
- of proteins larger than 5 kDa (MWCO)
- of spheroidal nanoparticles greater than 2 nm Ø

Product Code	Name	Sample Vol.	Pack Size
CP-0501	CentriPure 2-Z25M	150 – 300 µL	50 columns
CP-0502	CentriPure 5-Z25M	0.5 mL	50 columns
CP-0503	CentriPure 10-Z25M	1.0 mL	50 columns
CP-0504	CentriPure 25-Z25M	2.5 mL	25 columns
CP-0505	CentriPure 50-Z25M	5.0 mL	10 columns
CP-0506	CentriPure 100-Z25M	10.0 mL	10 columns
CP-0507	CentriPure 200-Z25M	20 mL	1/20 columns
CP-0508	CentriPure 300-Z25M	30 mL	1/20 columns
CP-0509	CentriPure 400-Z25M	40 mL	1 column
CP-0510	CentriPure 500-Z25M	50 mL	1 column
CP-0511	CentriPure 1000-Z25M	100 mL	1 column
CP-0512	CentriPure 1500-Z25M	150 mL	1 column
CP-0405	CentriPure 25-Z25M endotoxin-free	2.5 mL	10 columns
CP-0419	CentriPure 100-Z25M endotoxin-free	10.0 mL	10 columns

ENDOTOXIN FREE

GRAVITATIONAL FLOW

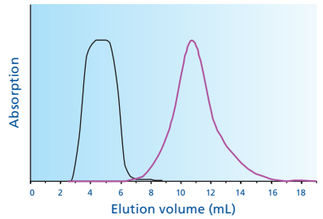
CentriPure
Hydrated Gel Filtration Columns

For rapid purification, desalting, and buffer exchange using gravity flow

CentriPure Gel Filtration Columns for rapid and efficient removal of small molecules from **nucleic acids**.

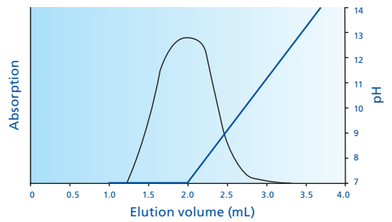
High Performance Examples:

Removal of fluorescent dye using CentriPure 25-Z25M



2.5 mL sample volume
5-TAMRA, 2.5 µmol: red line (280 nm)
18-mer oligonucleotide, 0.25 µmol, black line (260 nm)
Elution with pure water

Depletion of concentrated ammonia using CentriPure 10-Z25M

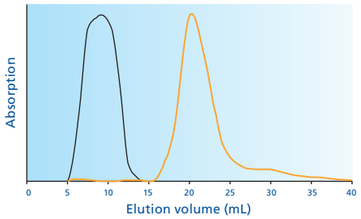


after oligo cleavage from solid support and removal of protecting groups
1.0 mL sample volume
18-mer oligonucleotide, 0.2 µmol: black line (260 nm)
Ammonia, 10 M: blue line (pH)
Elution with pure water

CentriPure Gel Filtration Columns for rapid and efficient removal of small molecules from **antibodies, enzymes and other proteins**.

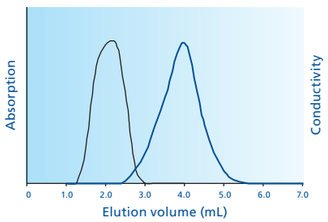
High Performance Examples:

Removal of fluorescent dye using CentriPure 50-Z25M



5.0 mL sample volume
Ovalbumin, 5 mg: black line (280 nm)
Fluorescein, 2.5 µmol: orange line (490 nm)
Elution with pure water

Desalting of protein solution using CentriPure 10-Z25M



1.0 mL sample volume
Anti-rabbit IgG, 1 mg: black line (280 nm)
NaCl, 0.8 M: blue line (µS/cm)
Elution with pure water

emp BIOTECH

CentriPure Z50
Gel Filtration Columns

For rapid desalting and buffer exchange
- of oligonucleotides longer than 20 base pairs/nucleotides
- of proteins larger than 25 kDa (MWCO)
- of spheroidal nanoparticles greater than 4 nm Ø

Product Code	Name	Sample Vol.	Pack Size
CP-0601	CentriPure 2-Z50M	150 – 300 µL	50 columns
CP-0602	CentriPure 5-Z50M	0.5 mL	50 columns
CP-0603	CentriPure 10-Z50M	1.0 mL	50 columns
CP-0604	CentriPure 25-Z50M	2.5 mL	25 columns
CP-0605	CentriPure 50-Z50M	5.0 mL	10 columns
CP-0606	CentriPure 100-Z50M	10.0 mL	10 columns

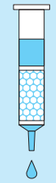
GRAVITATIONAL FLOW

CentriPure
Hydrated Gel Filtration Columns

easy 4 step protocol

1.
Column Preparation

Remove the cap from the top and then the white bottom cap of the **CentriPure** Column. Allow excess column fluid to drain (via gravity) into a suitable waste reservoir.



2.
Column Equilibration

Equilibrate the column by loading it with 5x the bed volume of water or buffer (use the same buffer for equilibration and elution). Allow the equilibration buffer to drain completely.

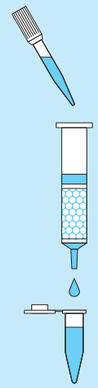
3.
Sample Application

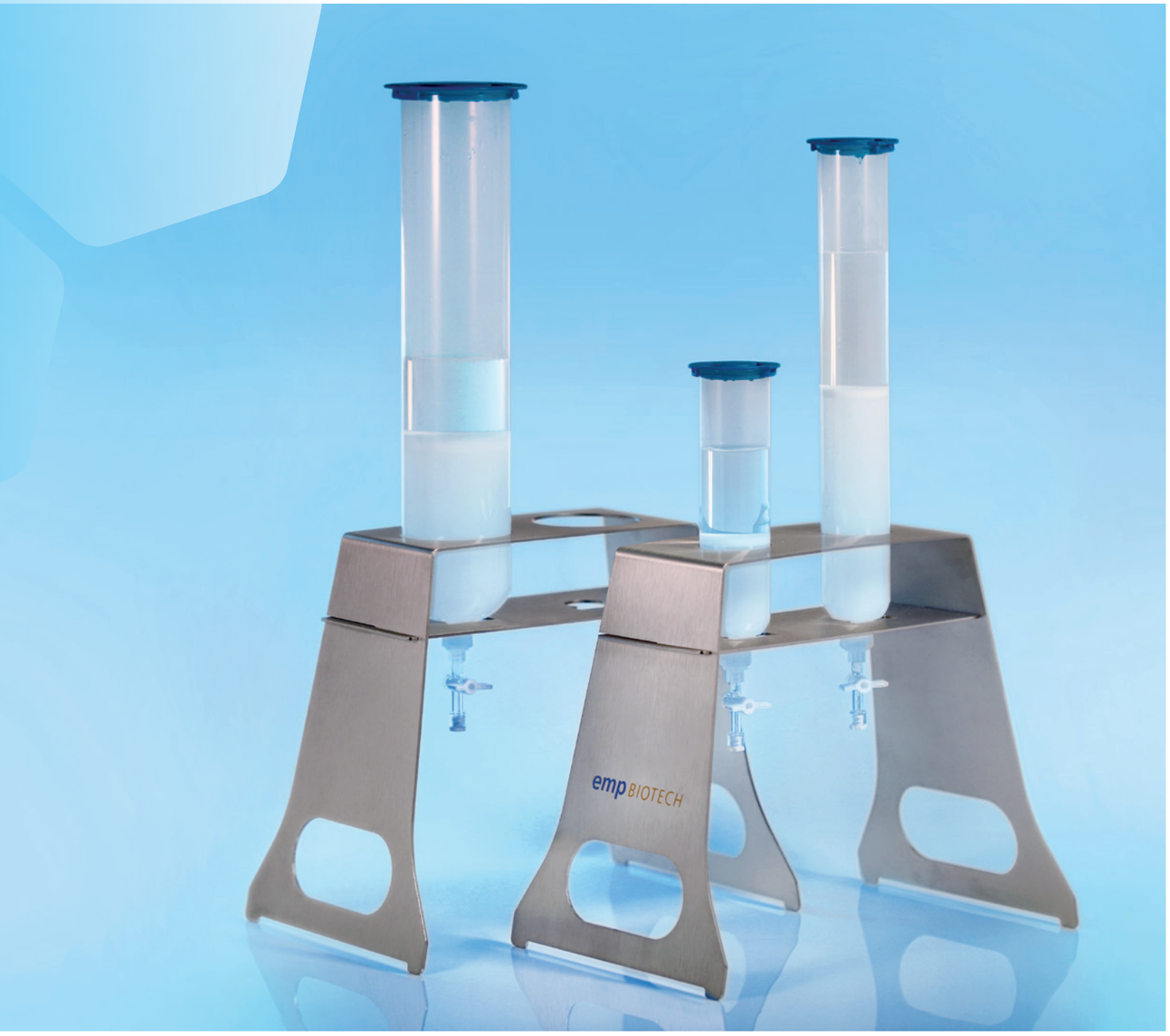
Transfer the sample to the **CentriPure** Column.

Allow the sample to enter the gel bed completely.

4.
Elution

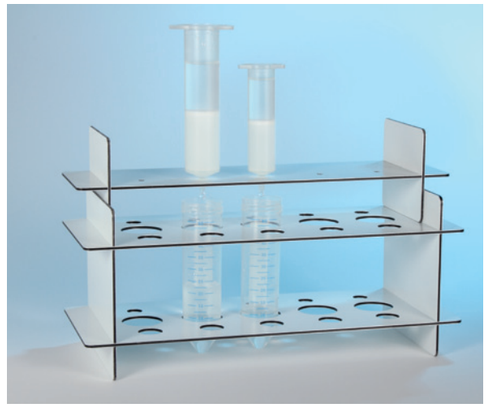
Place a tube for sample collection under the **CentriPure** Column. Transfer the elution buffer to the column and elute the purified sample.

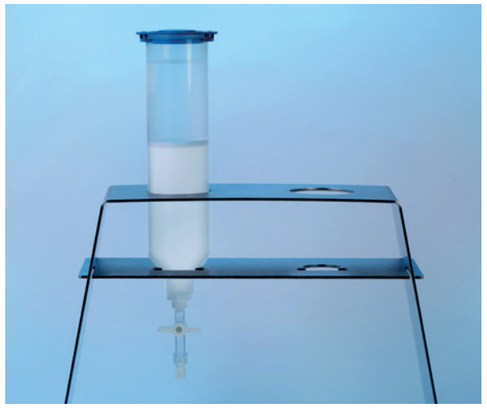




LabRacks

For CentriPure Gel Filtration Columns





The ***emp*** **LabRacks** for **CentriPure** Gel Filtration Columns make purification easy and convenient. The unique design allows use with any column size. Washing, elution and sample collection are all performed smoothly and efficiently. The ***emp*** **LabRacks** are constructed from sturdy materials, which provide high stability, resistance to solvents, efficient work flow and increased safety.

The small ***emp*** **LabRack** is made of *Dibond* composite material. Samples may be collected with either a standard 15 mL Falcon tube, a 1.5 mL microcentrifuge tube or a 50 mL Eppendorf Tube®.

The ***emp*** **LabRacks** for the larger **CentriPure** Gel Filtration Columns are made of brushed stainless steel.

Description	Order No.
LabRack for CentriPure 2 to CentriPure 100 Columns	CP-9914
LabRack for CentriPure 200 to CentriPure 500 Columns	CP-9937
LabRack for CentriPure 1000 to CentriPure 1500 Columns	CP-9936

CentriPure 96

Gel Filtration Column Array

– designed specifically for automated systems
– simultaneously processes 96 samples up to 500 µL
– standard SLAS microplate footprint

please ask for our CentriPure 48 and CentriPure 24 Arrays

The **CentriPure 96** Column Array is designed for 96 simultaneous purifications of proteins, oligonucleotides, or spheroidal nanoparticles in a convenient microplate format.

Within our **CentriPure 96** Column Array range, various sample volumes can be processed either using gravity or light vacuum:

150 – 300 µL – **CentriPure 96 Gel Filtration Column Array 300-Z25M**
400 µL – **CentriPure 96 Gel Filtration Column Array 400-Z25M**
500 µL – **CentriPure 96 Gel Filtration Column Array 500-Z25M**

Precision packed with **Zetadex-25** ultrapure dextran gels, the **CentriPure** Column Array is a preferred method for removal of small molecules such as salts, dyes, urea, ammonia, biotin, inhibitors and other small molecular weight impurities and to provide a rapid means of buffer exchange.

CentriPure 96
Gel Filtration Column Array

1. Column Preparation

a. Carefully remove the desired number of cap strips from the top of the array and then remove the entire bottom sealing foil.

b. Allow excess column fluid to drain (via gravity) into a suitable waste reservoir. A vacuum of 950 mbar may be used with a manifold to accelerate this process.

2. Column Washing / Equilibration

a. Wash each column 4 times (approx. 5 mL total) with either deionized water or buffer (use the same buffer for both equilibration and elution).

b. Allow the wash buffer to drain completely between each aliquot. A vacuum of 950 mbar may be used to speed up the washing process.

3. Sample Application

a. Load your samples (up to 300 µL) to each column of the array. Do not use vacuum for sample application. If the sample volume is less than 150 µL, add enough wash or equilibration buffer so that the combined volume of each sample equals 150 µL.

4. Elution

a. Using the chart below, determine the pre-run and elution volumes specific for your sample size.

b. Load the pre-run volume to each column and let it completely enter the gel bed. Do not use vacuum.

c. Place a collection plate for sample collection under the array.

d. Load the correct elution volume to each column and elute the purified sample by gravity.

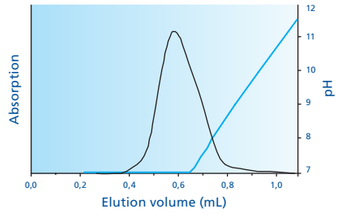
Sample volume	Pre-run volume	Elution volume	Oligo recovery*	Salt removed
150 µL	200 µL	300 µL	95%	99.9%
200 µL	150 µL	350 µL	94%	99.4%
250 µL	100 µL	400 µL	96%	99.1%
300 µL	0 µL	500 µL	95%	96.2%

* determined using 64 nmol/mL 25-mer oligo in 0.8 M NaCl

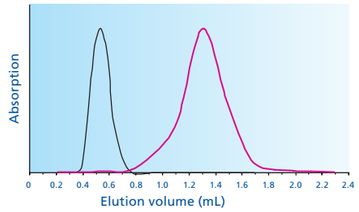
CentriPure 96

– designed specifically for automated systems
– simultaneously processes 96 samples up to 300 µL
– standard SLAS microplate footprint

The **CentriPure 96** Column Array for removal of small molecules such as salts, dyes, ammonia, biotin, etc. from **nucleic acids** longer than 10 bases.

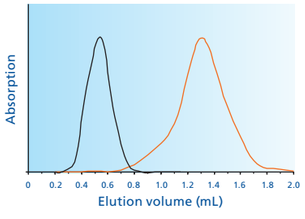


Separation of oligonucleotide from conc. ammonia after cleavage from solid support and removal of protecting groups (18-mer, Scale: 0.04 µmol, 200 µL sample volume).

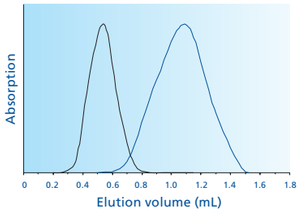


Elution profile overlay of 0.1 µmol 5-TAMRA and 0.04 µmol oligonucleotide (200 µL sample volume).

The **CentriPure 96** Column Array for removal of small molecules such as buffer salts, dyes, and haptens from **proteins** larger than 5 kDa.



Elution profile overlay of ovalbumin (1 mg/mL) and free dye (TAMRA, 0,1 µmol) in a 200 µL sample volume.

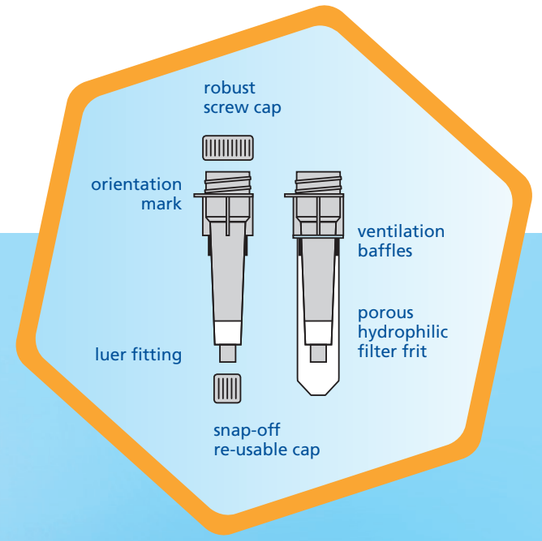


Desalting of protein solution (1 mg ovalbumin (OvA) in 1 mL 0.8 M NaCl), elution with water (200 µL sample volume)

ZetaSpin Columns

Unique conical column for greater separation sterile, hydrated and ready to use

Removes up to 99.999% salts, dyes, haptens and other small molecules
samples up to 100 µL are processed in under 5 minutes



advanced tapered column design

clicks into wash tube

allows easy removal from centrifuge

ZetaSpin centrifugal columns are designed for rapid desalting, buffer exchange, and removal of small molecular weight impurities using a centrifuge. Proteins, oligonucleotides, or spheroidal nanoparticles are simultaneously purified, desalted and eluted into pure water. Alternatively, elution directly into PBS, TRIS, or pure water stabilized with azide is accomplished by using **ZetaSpin** columns which have been pre-equilibrated with these buffers.

The unique conical column design of the **ZetaSpin** allows purification of samples up to 100 µL. Dideoxy terminators, salts, metal cations, urea, dyes, inhibitors, biotin, haptens, and other small impurities are efficiently removed in under 5 minutes.

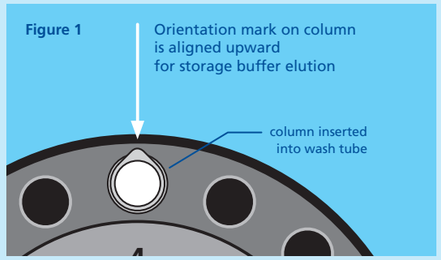
Sterile packed and ready-to-use.

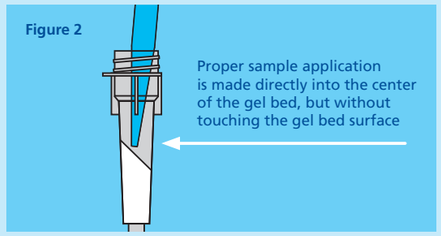
ZetaSpin columns are available as **Zetadex-25** or **Zetadex-50,** pre-swollen in either pure water, TRIS, PBS, or stabilized with sodium azide.

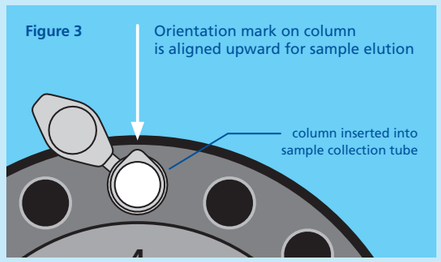
ZetaSpin columns are available in kits of 25 or 100 columns.

ZetaSpin Centrifugal Columns

Unique conical column for greater separation sterile, hydrated and ready to use







1. Column Preparation

a) If the columns have been stored cold, allow to warm to room temperature before use.
b) Gently invert or vortex to resuspend the gel and remove air bubbles, then allow to settle upright for ten minutes.
c) Remove bottom cap and then remove top cap.

2. Removal of storage buffer

a) Place the column into a wash tube.
b) Centrifuge at 1000 x *g* for 2 minutes. Note the column position using the orientation mark (see Fig 1.).
c) Discard wash tube and eluted storage buffer.

3. Sample processing

a) Carefully apply sample directly to center of gel bed but without touching the gel bed surface (see Fig. 2).
b) Place column into a collection tube. Maintain proper column orientation (see Fig 3).
c) Centrifuge at 1000 x *g* for 2 minutes to elute the purified sample.

	H_2O				TRIS		PBS	
	ZetaSpin Desalt			ZetaSpin Azide	ZetaSpin TRIS		ZetaSpin PBS	
Product Code	**MS-0101**	**MS-0102**	**MS-0105**	**MS-0109**	**MS-0103**	**MS-0107**	**MS-0104**	**MS-0108**
Gel Matrix	Zetadex-50SF	Zetadex-50SF	Zetadex-25SF	Zetadex-25SF	Zetadex-50SF	Zetadex-25SF	Zetadex-50SF	Zetadex-25SF
Sample Buffer	deionized water	deionized water	deionized water	deionized water and 0.02% sodium azide	1 mM TRIS, pH 8	1 mM TRIS, pH 8	standard PBS, pH 7	standard PBS, pH 7
Application	For desalting of proteins larger than 25 kDa or nanoparticles greater than 4 nm Ø.	For desalting of oligonucleotides longer than 20 bp/nt from Sanger sequencing reactions.	For desalting of proteins larger than 5 kDa, nucleic acids longer than 10 bp/nt, or nanoparticles > 2 nm Ø.	For desalting of proteins > 5 kDa, nucleic acids > 10 bp/nt, or nanoparticles > 2 nm Ø, and simultaneous elution into aqueous 0.02% sodium azide.	For purification of proteins larger than 25 kDa or nanoparticles > 4 nm Ø, and simultaneous buffer exchange to TRIS (1 mM, pH 8).	For purification of proteins larger than 5 kDa or nanoparticles > 2 nm Ø, and simultaneous buffer exchange to TRIS (1 mM, pH 8).	For purification of immunoglobulins and other proteins larger than 25 kDa and simultaneous buffer exchange to PBS (8 mM, pH 7).	For purification of proteins larger than 5 kDa or nanoparticles > 2 nm Ø, and simultaneous buffer exchange to PBS (8 mM, pH 7).
Gel Bed Volume	0.5 mL	0.5 mL	0.5 mL	0.35 mL	0.5 mL	0.5 mL	0.5 mL	0.5 mL
Sample Volume	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*	2 to 100 µL*
Optimal Centrifuge Conditions	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min	1000 x *g* for 2 min
Removal of Dye (50 µL 1mM 5/6 carboxyfluorescein in 0.1 M $NaHCO_3$)	> 99.9995%	> 99.999%	> 99.99%	> 99%	> 99.999%	> 99.95% (TAMRA dye substituted for fluorescein)	> 99.999%	> 99.99%
Removal of Dye (100 µL 1mM 5/6 carboxyfluorescein in 0.1 M $NaHCO_3$)	> 99.95%	> 99.95%	> 99.5%	Not recommended to use samples > 50 µL	> 99.99%	> 99.5% (TAMRA dye substituted for fluorescein)	> 99.99%	> 99.5%
Removal of Salt (50 µL 0.8 M NaCl)	> 99.9% > 99.999% (with extra wash step)	> 99.9%	> 99.5%	Not evaluated due to sodium azide	n. a.	n. a.	n. a.	n. a.
Removal of Salt (100 µL 0.8 M NaCl)	> 99.0% > 99.5% (with extra wash step)	> 99.0%	> 99.0%	Not evaluated due to sodium azide	n. a.	n. a.	n. a.	n. a.
Pack Sizes	25,100 columns	25,100 columns	25,100 columns	25,100 columns	25,100 columns	25,100 columns	25,100 columns	25,100 columns

* optimized for 50 µL

please ask also for our non-hydrated resins ZetaSpin DRY

ZetaSpin Columns

ZetaSpin centrifugal columns are designed for purification and desalting of oligonucleotides longer than 20 base pairs and from proteins greater than 25 kDa without dilution of the sample.

The gel bed has a volume of 3.5 mL. Optimal purification and recovery is obtained with a sample volume of 500 µL (sample volumes up to 700 µL can be processed).

Figure 1

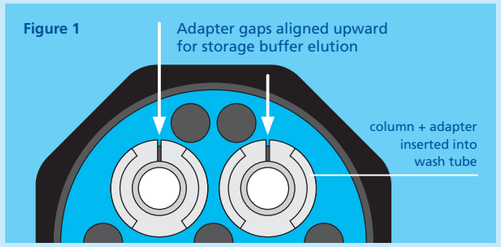


Figure 2

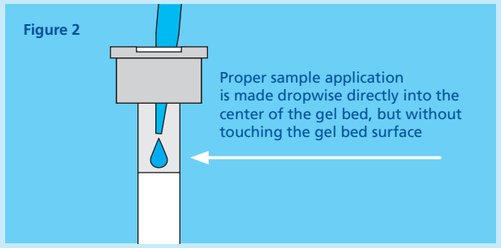
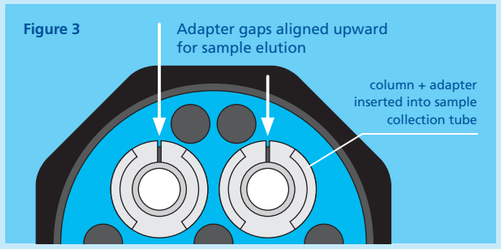


Figure 3



1. Column Preparation

a) Always allow columns to equilibrate to ambient temperature before use.
b) Briefly vortex columns to resuspend gel and to remove air bubbles.
c) Remove top cap and press column into adapter completely.

2. Removal of storage buffer

a) Remove bottom cap, place the column + adapter into wash tube.
b) Place them in the rotor. Note the column position using the adapter gap (see Fig. 1). Centrifuge at 800 x *g* for 2.5 minutes (swinging bucket) to remove interstitial fluid.
c) Remove column + adapter and discard wash tube.

3. Sample processing

a) Carefully apply sample directly in the center of the gel bed in a slow, dropwise manner without disturbing the gel bed (see Fig. 2).
b) Place column + adapter into a collection tube. Maintain proper column orientation (see Fig. 3).
c) Centrifuge at 800 x *g* for 2.5 minutes (swinging bucket) to elute the purified sample.

NOTE:

The emp centrifuge adapter only works with **eppendorf** 50 mL conical tubes.

only for use with swinging rotors

The gel matrix of **ZetaSpin** columns is Zetadex-50 Superfine, a beaded composite material developed by ***emp*** *BIOTECH* comprised of ultrapure cross-linked dextran.

the unique emp centrifuge adapter allows for centrifugation of sample volumes of 500 µL

Starter Kits include:

6 x ZetaSpin Columns
6 x adapters
6 x wash tubes
6 x collection tubes

The porous matrix of chemically and physically stable spherical particles is designed to separate small molecules from the larger target molecules. While the smaller molecules enter the pores of the beads, the larger molecules remain in the void volume. They pass the beads unhindered as they make their way through the column and rapidly elute.

This process was optimised for the centrifuge (with swinging rotors) to circumvent sample dilution. Further improvement on resolution and recovery of the biomolecule were achieved with the smaller particle size of the Superfine Grade, 20 – 50 µm. **ZetaSpin** columns are packed with Zetadex-50 that has a distinct MWCO at 25 kDa/20 bases for nucleic acids.

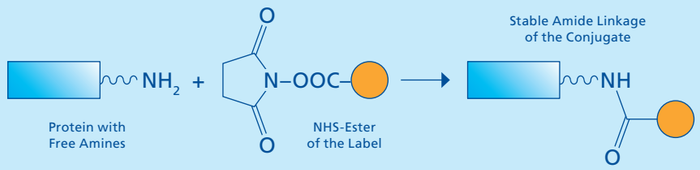
Order No.	Name	Application	Sample Vol.	Pack Size
MS-0201-Z001.0	ZetaSpin Desalt Starter Kit	For desalting and purification	500 µL	6 columns
MS-0201-Z048.0	ZetaSpin Desalt			48 columns
MS-0202-Z001.0	ZetaSpin PBS Starter Kit	For rebuffering and purification	500 µL	6 columns
MS-0202-Z048.0	ZetaSpin PBS			48 columns

ZetaSpin columns are ready-to-use and come in either deionized water or PBS for purification of proteins greater than 25 kDa and oligonucleotides longer than 20 base pairs.

TurboTag™ Labeling Kits

QUICK: Pure, labeled protein in just 10 minutes
EASY: Simply mix, incubate, and purify
PRECISE: Choose and control the degree of labeling of your protein
CONVENIENT: Includes ready-to-use ZetaSpin columns

chemistry



typical workflow

Delivers precision labeling and rapid purification of antibodies, enzymes and other proteins.
For controlled labeling and purification of proteins having a molecular weight greater than 25 kDa.

– 3 labeling reactions per kit
– Label up to 15 nmol of protein per reaction using covalent NHS-ester chemistry
– Optimized IgG labeling protocols for 100 µg and 1 mg

Catalog of our Dyes coming soon

Fluorescent Dye Data

Fluorophore	Excitation (λmax in nm)		Emission (λmax in nm)		as an alternative to	Product Code
MANT	331		426		AlexaFluor™ 350	MK-F0108
DY-405	405		423			MK-D0113
DY-415	418		467			MK-D0114
DY-485XL	485		560			MK-D0143
DY-490	491		515		AlexaFluor™ 488	MK-D0125
DY-495	497		523			MK-D0109
Fluorescein (FAM)	498		522			MK-F0101 MK-F0103*
DY-481XL	515		650			MK-D0103
DY-521XL	523		668			MK-D0126
DY-530	539		561			MK-D0127
DY-555	547		572		AlexaFluor™ 546	MK-D0128
DY-554	551		572		CY3™, AlexaFluor™ 555	MK-D0101
Tetramethylrhodamine (TAMRA)	557		574			MK-T0102
DY-550	558		578			MK-D0111
DY-547P1	559		575			MK-D0112
DY-549P1	560		575			MK-D0116
DY-590	580		599		AlexaFluor™ 568	MK-D0102
X-Rhodamine (ROX)	587		599			MK-R0103
DY-594	594		615		AlexaFluor™ 594	MK-D0129
Texas Red	595		615			MK-R0102
DY-634	635		658			MK-D0107
DY-633	637		657			MK-D0104
Semper Red 647	647		665			MK-F0102
DY-647P1	652		663		CY5™, AlexaFluor™ 647	MK-D0110
DY-648P1	653		672			MK-D0115
DY-649P1	654		672			MK-D0117
DY-652	654		675			MK-D0118
DYQ-661	662		n/a**			MK-D0105
Methylene Blue (DCMB)	667		696			MK-E0150
DY-677	673		694		CY5.5™, AlexaFluor™ 680	MK-D0119
DY-675	680		699			MK-D0106
DY-682	692		709			MK-D0108
DY-701	706		731			MK-D0120
DY-700	707		730			MK-D0130
DY-734	736		759			MK-D0121
DY-750	747		776		CY7™	MK-D0132
DY-752	748		772			MK-D0123
DY-749P1	759		780			MK-D0122
DY-777	770		788			MK-D0124

* FITC
** Quencher. No Stokes shift.

ZetaPlate Gel Filtration Plates

with Zetadex Size Exclusion Resin

for desalting, buffer exchange, and removal of free labels

ZetaPlate Gel Filtration Plates are designed for high throughput desalting and removal of small molecular weight impurities using a centrifuge with a swinging bucket rotor. Proteins, oligonucleotides, or spheroidal nanoparticles are simultaneously purified, desalted and eluted into pure water. The filtration plates are available in standard 96 or 384 well SLAS formats.

Each multiwell plate is precision filled with **Zetadex** Size Exclusion Resin, a beaded composite material developed by ***emp*** *BIOTECH* and comprised of ultrapure cross-linked dextran. Each gel bed is supported on an individual ultra high molecular weight PE membrane with an effective pore size of 25 µm.

Sterile packed and ready-to-use.

ZetaPlate Gel Filtration Plates are optimized for rapid removal of dye terminators, dNTPs, salts, nucleic acid fragments, biotin and all other low molecular weight impurities using a 2 minute centrifuge protocol.

For centrifugation protocols using a swinging bucket rotor

ZetaPlate Gel Filtration Plates

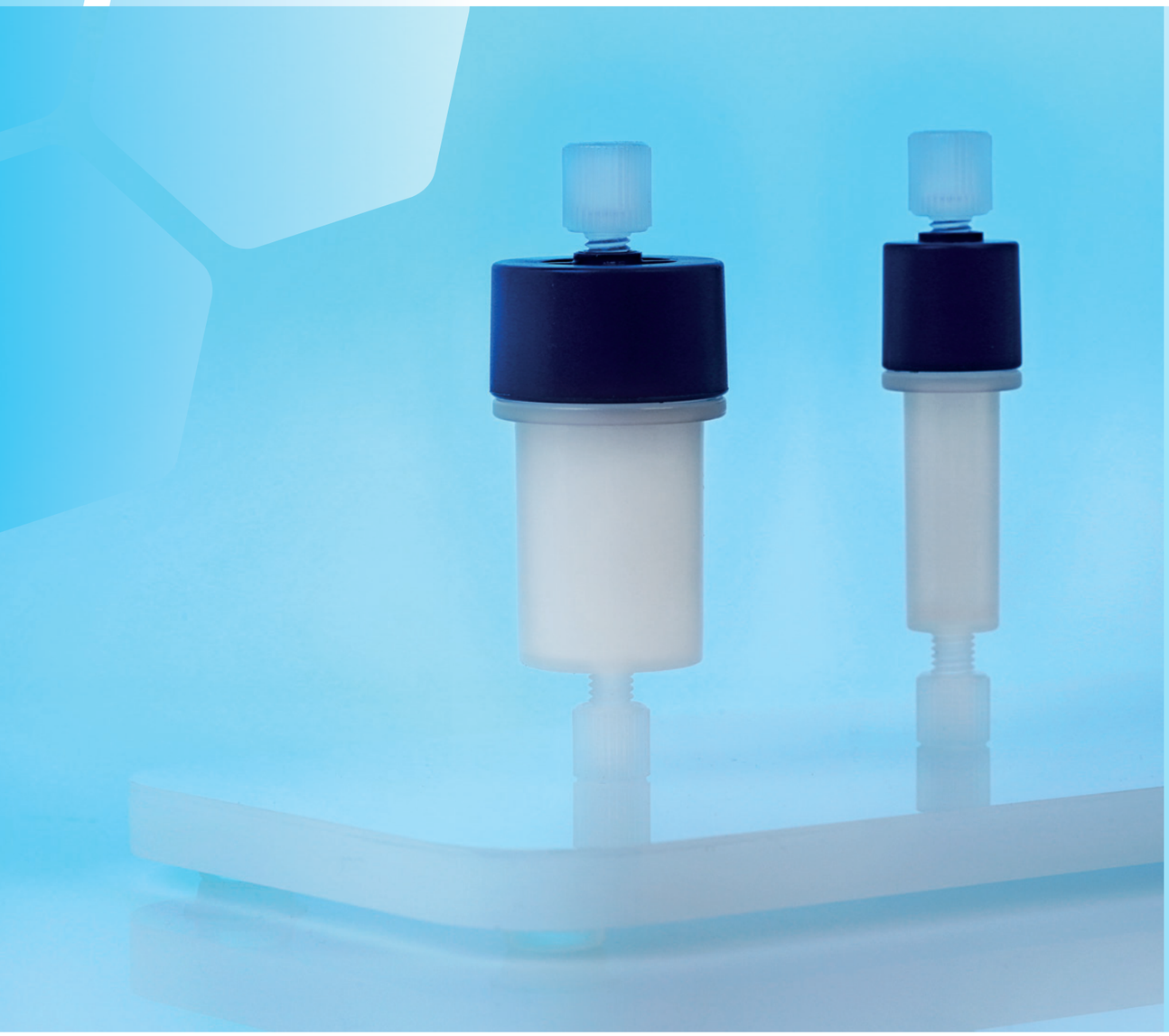
with Zetadex Size Exclusion Resin

for desalting, buffer exchange, and removal of free labels

Description	No. of Wells	Well Vol. (µL)	Plate Height (mm)	Short or Long Drip Directors	Gel Bed Vol. (µL)	Max. Sample Vol. (µL)	For Proteins / Nucleic Acids greater than	Matrix	Mode of Operation	Product Code
ZetaPlate-384 Desalt Gel Filtration Plate 135 µL Well Volume, LD	384	135	15	Long	65	8	25 kDa/20 bases	Z-50SF	centrifuge 3 minutes at 1000 x *g*	CP-0102
ZetaPlate-96 Desalt Gel Filtration Plate 400 µL Well Volume, SD	96	400	20	Short	320	20	25 kDa/20 bases	Z-50SF	centrifuge 3 minutes at 1000 x *g*	CP-0115
ZetaPlate-96 Desalt Gel Filtration Plate 400 µL Well Volume, LD	96	400	20	Long	320	20	25 kDa/20 bases	Z-50SF	centrifuge 3 minutes at 1000 x *g*	CP-0116
ZetaPlate-96 Desalt Gel Filtration Plate 800 µL Well Volume, SD	96	800	31	Short	400	30	25 kDa/20 bases	Z-50SF	centrifuge 3 minutes at 1000 x *g*	CP-0101
ZetaPlate-96 Desalt Gel Filtration Plate 800 µL Well Volume, SD	96	800	31	Short	400	30	5 kDa/10 bases	Z-25SF	centrifuge 3 minutes at 1000 x *g*	CP-0130
ZetaPlate-96 Desalt Gel Filtration Plate 1000 µL Well Volume, LD	96	1000	38	Long	650	40	25 kDa/20 bases	Z-50SF	centrifuge 3 minutes at 1000 x *g*	CP-0125
ZetaPlate-96 Desalt Gel Filtration Plate 1000 µL Well Volume, LD	96	1000	38	Long	850	40	5 kDa/10 bases	Z-25SF	centrifuge 3 minutes at 1000 x *g*	CP-0160

ZetaSep/ZetaPrep
FPLC Desalting Columns

For desalting, removal of small molecules, and buffer exchange using liquid chromatography systems



NEW PRODUCT
ZetaPrep FPLC Column

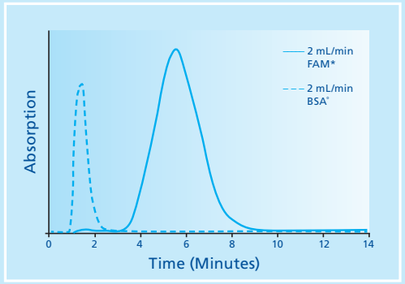
ZetaSep and ZetaPrep FPLC Desalting Columns are designed for:

- Separating larger biomolecules (i.e. proteins such as antibodies, enzymes or larger nucleic acids) from unwanted smaller molecules
- Buffer exchange (after a pre-equilibration), desalting, removal of low molecular weight contaminants, and reaction terminations
- Simple, rapid and reproducible separation using a syringe, pump or liquid chromatography system

ZetaSep and ZetaPrep FPLC Desalting Columns are available with **Zetadex-25**, which has a molecular weight cut-off (MWCO) of approximately 5 kDa. Proteins, oligonucleotides, spheroidal nanoparticles or other biomolecules larger than 5 kDa are gently and efficiently separated from salts, metal cations, urea, dyes, inhibitors, biotin, haptens, and other low molecular weight impurities.

ZetaSep/ZetaPrep
FPLC Desalting Columns

For desalting, removal of small molecules, and buffer exchange using liquid chromatography systems



High Performance Results:

Sample: 1 mL of 2 mg/mL BSA & 100 µM of 5-Carboxyfluorescein in PBS pH 7.4 (0.05% NaN_3).

Flow rate: 2 mL/min

Eluent: PBS pH 7.4 (0.05% NaN_3)

Detection: Abs. at 280 nm and 490 nm

Specifications

Column bed volume	5 mL
Size of eluted Proteins	> 5 kDa
System compatibility	- Automated liquid chromatography systems (MPLC, FPLC, ÄKTA™, etc.) - Peristaltic pump - Syringe
Column dimensions	1.6 cm inner diameter x 2.5 cm height
Column body material	Polypropylene
Column ports	Inlet 10 – 32 (1/16") female Outlet 10 – 32 (1/16") male
Support	Zetadex-25 Superfine
Bead size	40 – 110 µm (hydrated)
Maximum back pressure	3 bar (0.3 MPa)
Recommended flow rate	1 to 5 mL/min
Maximum recommended flow rate	10 mL/min
Storage temperature	ambient
Storage solution	20% (v/v) ethanol

Product Code	Description	Bed Volume	Zetadex Z25	Recom. Flow Rate	Max. Back Pressure	Pack Size
ZS-0101	ZetaSep Desalt	5 mL	Superfine	1-10 mL/min	2 bar	5/100 col.
ZS-0102	ZetaSep Desalt	1 mL	Superfine	0.2-2 mL/min	2 bar	100 col.
ZP-0101	ZetaPrep Desalt 16/100	20 mL	Fine	2.5-15 mL/min	2 bar	1 column

SOON
also available for Affinity (IMAC + Protein A), IEX and HIC.

For more information please see our Biomolecule Purification Catalog.

Terms and Conditions

For conducting business with ***emp** BIOTECH*, please review our general terms and conditions as listed on our website **www.empbiotech.com**.

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***emp** BIOTECH* is ISO 9001:2015 and 13845:2016 certified.
Registration number 011001300789 (TÜV Rheinland)

More to Discover

Catalog of our Dyes coming soon

Synthesis Reagents
for automated oligonucleotide synthesis

Solvents and Reagents
- Deblocking / Detritylation
- Activators
- Capping Reagents
- Oxidizer
- Cleavage & Deprotection
- CE-ß-Elimination
- Sulphurizing Reagents
- Solvents & Solvent Mixtures

Moisture Control
- Molecular Sieves & Moisture Traps

Labeling and Purification
- Oligo Labeling
- Oligo Purification
- Oligo Desalting

Biomolecule Purification
Solutions for downstream processing

Chromatography Resins for clarified feed streams
- Affinity Chromatography
- Ion Exchange Purification
- Hydrophobic Interaction Chromatography
- Activated Zetarose Solid Phases
- GraviPure Columns/Multi Column Arrays
- ZetaPrep FPLC Columns

Solutions for unclarified feed streams
- SMART Chromatography™

Chromatography Resins for polishing steps
- Size Exclusion Chromatography
- ZetaSep/ZetaPrep FPLC Desalting Columns
- CentriPure Desalting Columns
- CentriPure Buffer Exchange Columns

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