



Thermo Scientific
Zeba Desalting Products



high recovery resins

for high-performance protein desalting

Spin Desalting Columns and Plates • Desalting Chromatography Cartridges



Spin your way to better protein recovery

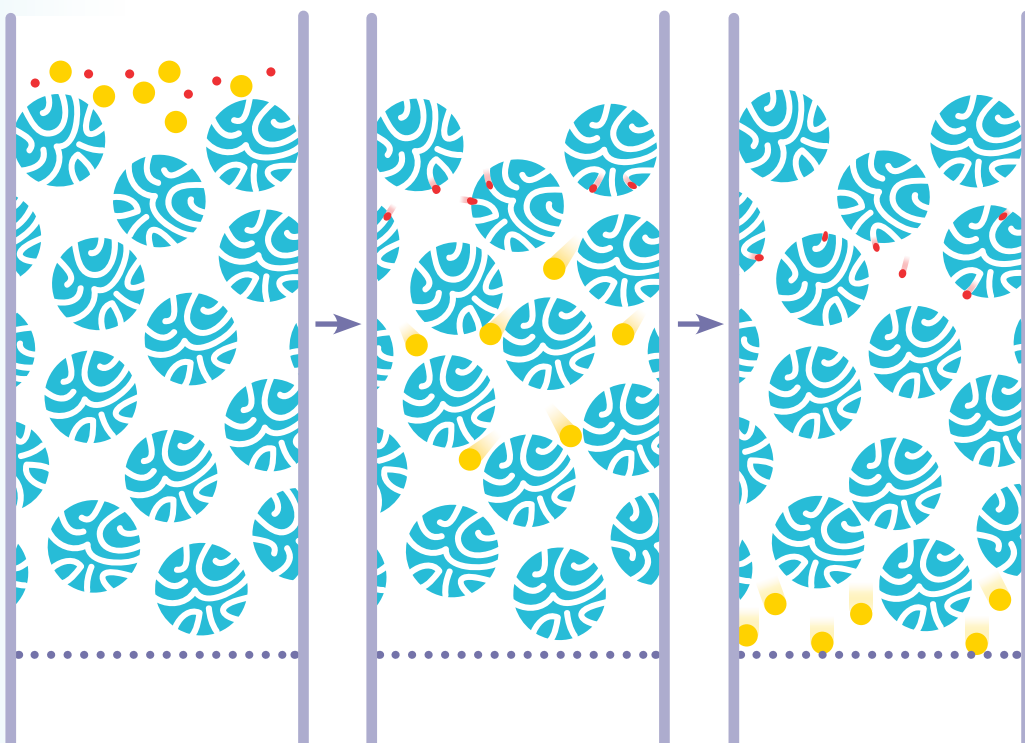
Thermo Scientific™ Zeba™ Resin technology provides consistent performance and peace of mind. The unique, proprietary Zeba Resin enables better protein recovery, even for samples with low protein concentrations.

Thermo Scientific™ Zeba™ Desalting Products rapidly process sample volumes ranging from 10µL to 4mL. The combination of the unique resin and easy-to-use column, plate and cartridge formats ensure maximum protein recovery in minimum time.

The proof is in the protein

Researchers who traditionally used other methods or products for sample desalting, contaminant removal and/or buffer exchange have turned to Thermo Scientific™ Zeba™ Products for improved protein yield and faster sample processing time.

Figure 1. Passage of a protein sample through a column of porous resin facilitates buffer exchange and desalting. Small molecules in the original sample (red) enter the bead pores, thereby taking a longer and slower path through the column than the protein (yellow). As a result the protein separates from the original buffer salts and exchanges into the column buffer.



Overview of sample desalting and buffer exchange using gel filtration

Size exclusion chromatography (SEC) involves the chromatographic separation of molecules of different dimensions, molecular weight or size. Size exclusion chromatographic resin usually consists of small, uncharged porous particles with a range of pore sizes. Molecules are separated based on the relative abilities of molecules to penetrate into the pores. This technique is also commonly referred to as gel filtration or molecular sieve chromatography.

Size exclusion chromatography is used in research and industrial applications for a wide range of applications ranging from the separation of proteins, DNA fragments and polymers.

In addition to the separation of macromolecules, SEC is also commonly used for the separation and removal of unwanted molecules from a macromolecule of interest (desalting), or exchange of the buffer for downstream applications (buffer exchange). Applications for desalting include not only the removal of salts, but also the removal excess biotin, crosslinkers, reactive dye, radioactive labels or other derivatization reagents from conjugation reactions. Buffer exchange is used to place a protein solution into a more appropriate buffer before subsequent applications such as electrophoresis, ion exchange and affinity chromatography, or conjugation.

Size exclusion chromatography applications for separating macromolecules based on subtle differences in size typically use resins with large and varied pore sizes in long chromatography columns. However, for buffer exchange and desalting applications, it is mainly the maximum effective pore size (exclusion limit or molecular weight cut off (MWCO) of the resin), which determines the size of molecules that can be separated. Molecules that are significantly smaller than the MWCO penetrate into the pores of the resin, while molecules larger than the MWCO are unable to enter the pores and remain together in the void volume of the column (Figure 1). By passing samples through a column resin-bed with sufficient length and volume, macromolecules can be fully separated from small molecules that travel a greater distance through the pores of the resin bed. No significant separation of molecules larger than the exclusion limit occurs.

In order for the desired macromolecules to remain in the void volume, resins with very small pore sizes must be utilized. For routine desalting and buffer exchange applications, choosing a resin with a molecular weight cut off between 5 and 10kDa is usually best. For other applications, such as separating peptides from full-sized proteins, resins with larger exclusion limits may be necessary. The macromolecular components are recovered in the buffer used to pre-equilibrate the gel-filtration matrix, while the small molecules can be collected in a later fraction volume or left trapped in the resin. One important feature to note when choosing a resin is that the small molecules targeted for removal must be *several times smaller* than the MWCO for proper separation.

Dialysis is useful for many of the same desalting and buffer exchange applications performed with gel filtration chromatography as both methods are based on similar ranges of molecular weight cut offs, but gel filtration is faster (a few minutes vs. hours for dialysis). An additional advantage of gel filtration is the ability to remove contaminants in a relatively small volume (or left on the column), an important feature when working with toxic or radioactive substances. Dialysis, on the other hand, is much less dependent on sample size as related to device format. For dialysis applications, achieving a high-percentage sample recovery and molecule removal is generally straightforward with little optimization needed. For gel filtration applications it is important to select a column size and format that is suitable for your sample.



Gel filtration formats for small sample processing

Gel filtration formats for smaller volumes include gravity-flow columns, chromatography cartridges, centrifuge columns and centrifuge plates.

Gravity-flow, or drip, columns use head-pressure from a buffer-chase to push the sample through the gel filtration matrix. The sample is loaded into the top of an upright column and allowed to flow into the resin bed. The sample is then chased through the column by adding additional buffer or water to the top of the column. During this process, small fractions are typically collected and tested for the macromolecules of interest. As an alternative to fraction collection, a single fraction equal to the full exclusion volume of the column is collected regardless of the sample volume. This eliminates the time and monitoring associated with fraction collecting; however, this can result in significant dilution of the sample depending on the sample volume.





To eliminate sample dilution and the collecting and monitoring of fractions, centrifuge-column or plate-based gel filtration, also referred to as spin desalting methods, are commonly used. Spin desalting is unique in that a centrifuge is used to first remove the resin's void volume of liquid, followed by sample addition and centrifugation. After centrifugation the macromolecules in the sample have moved through the column in approximately the same initial volume, but the small molecules have been forced into the pores of the resin and replaced by the buffer that was used to pre-equilibrate the gel-filtration matrix (Figure 2). Spin formats eliminate the need to wait for samples to emerge by gravity flow and require no chromatography system, allowing for multiple-sample processing simultaneously. However, due to the lack of a chase buffer, spin column methods have historically suffered from sample loss, particularly at low protein concentrations, and the sample volume they could be used with were limited. Zeba Desalting Products were specifically designed to provide consistent performance over a wide range of sample sizes and protein concentrations.

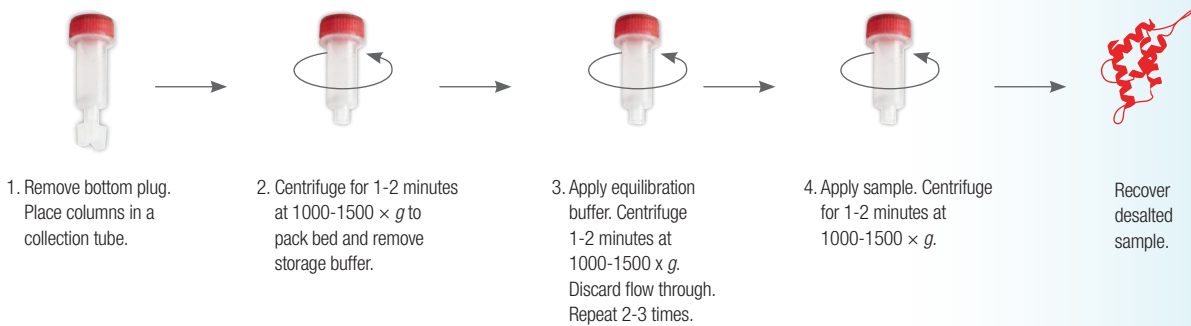


Figure 2. Protocol for desalting with Thermo Scientific Zeba Spin Desalting Columns.



High-performance desalting resins

Zeba Desalting Products contain proprietary high-performance resins with exceptional desalting and protein-recovery characteristics compared to other commercially available spin desalting media. Even very dilute protein samples can be successfully processed with high levels of protein recovery and greater than 95% retention (removal) of salts and other small molecules.

Highlights:

- **High performance** – proprietary resin provides excellent protein recovery and efficient contaminant removal
- **Flexible** – available in spin columns, filter spin plates and cartridges for a range of needs
- **Fast** – no fraction screening or waiting for protein to emerge by gravity flow
- **Economical** – great performance at a lower cost than other commercially available columns, plates and cartridges

Unlike the limited offerings of other suppliers, Thermo Scientific™ Zeba™ Spin Desalting Columns are available in a wide range of formats to match a variety of applications (Tables 1-3). Our broad portfolio of high-performance devices for desalting and buffer exchange provide easy handling, rapid processing and exceptional recovery for sample volumes between 2-4000µL (Table 1, see pages 8-12 for diagrams and dimensions). In addition, two size-exclusion resin options (7K and 40K MWCO) are available. The 7K Zeba Desalting Resin is recommended for removing molecules < 800Da from macro molecules greater than 7kDa. The 40K Zeba Desalting Resin is recommended for removing molecules < 1500Da from macro molecule greater than 30-40kDa. Salt removal is typically 95%-100%. Examples of protein-specific recovery, contaminant removal data, and benchmarks versus similar products from other suppliers are shown on pages 6-7.



Table 1. Thermo Scientific Zeba Desalting Products selection guide by format and recommended sample volume.

Format								
	Micro Spin Column	0.5mL Spin Column	2mL Spin Column	5mL Spin Column	10mL Spin Column	96-well Spin Plate	1mL Chromatography Column	5mL Chromatography Column
Resin Bed	75µL	0.5mL	2mL	5mL	10mL	550µL	1mL	5mL
Sample Volume (7K MWCO)	2-12µL	30-130µL	200-700µL	500-2000µL	700-4000µL	20-100µL	50-250µL	100-1500µL
Sample Volume (40K MWCO)	5-14µL	70-200µL	200-900µL	300-2000µL	1000-4000µL	20-100µL	NA	NA

Table 2. Thermo Scientific Zeba Resin selection guide by protein recovery and small molecule removal.

Size	7K		40K	
	Recovery	Removal	Recovery	Removal
Peptide/Protein < 7kDa	NR		NR	
Protein 7-13kDa	++		+	
Protein 14-20kDa	+++		++	
Protein 20-150kDa	+++		+++	
Molecule < 500Da		+++		+++
Molecule 600-1200Da		++		+++
Molecule 1200-1500Da		+		++
Molecule > 1500-2000Da		NR		+

NR = Not Recommended + = Good ++ = Better +++ = Recommended

Table 3. Comparison of recommended sample volume capacity of common spin desalting products.

	0mL	0.01mL	0.1mL	0.5mL	1mL	2mL	3mL	4mL
Thermo Scientific Zeba Spin Desalting Products		Zeba Micro Spin Column	0.5mL Zeba Spin Column	2mL Zeba Spin Column	5mL Zeba Spin Column	10mL Zeba Spin Column		
GE Healthcare Products			PD SpinTrap G-25 Column	PD MiniTrap™ G-25 Column	PD MiniTrap G-25 Column	PD-10 Desalting Columns		
Bio-Rad Products		Micro Bio-Spin™ 6 Column	Bio-Spin™ 6 Column					

Data analysis

Zeba Spin Desalting Columns contain a unique resin that provides exceptional desalting and protein recovery over a wide range of sample sizes and sample concentrations.

Protein-specific recovery data, contaminant removal data and benchmarks versus similar products from other suppliers were determined (Table 4, Figures 3-4). Recovery in the Zeba Spin Desalting Columns was typically > 80-100% with some minor protein loss occurring at the lowest sample volumes and protein concentrations tested. In other suppliers' products, a dramatic loss in protein recovery was observed at concentrations of 0.2mg and below with almost total loss of protein occurring in many samples. It is important to note that with all gel-filtration separation techniques the removal and recovery percentage achieved depends on the individual characteristics of the molecules involved such as shape, hydrophobicity, solubility, binding sites and concentration. While Zeba Spin Desalting Columns were designed to minimize the influence of these factors, each system should be examined and optimized independently. Additional data on the performance of Zeba Spin Desalting Columns across a range of different sample types was determined (Tables 5-6).

Table 4. Thermo Scientific Zeba Spin Desalting Columns provide exceptional protein recovery over a wider range of sample concentrations and volume compared to alternative products. Desalting columns were equilibrated with a final buffer containing 25mM Tris, 25mM NaCl at pH7.5. Samples were diluted in 25mM Tris, 500mM NaCl at pH7.5 and then desalted into the final buffer. All samples were processed according to the manufacturers' recommended instructions, but load volume may exceed recommended ranges (see below). There was no significant differences in salt concentration between any vendor when used within the recommended ranges. Protein concentration was determined using the Thermo Scientific™ BCA Assay (Product # PI23227). Recoveries with lysate are typically slightly lower than seen with individual proteins due to the loss of small molecular weight compounds and lysis contaminants that can influence protein assay results.

	Sample Volume	7K Zeba Spin Columns, 0.5mL	GE SpinTrap™ G-25	Bio-Rad Micro Bio-Spin™ 6 Columns	Sample Volume	7K Zeba Spin Columns, 10mL	GE PD-10 Columns	
Resin bed volume		550µL	500µL	700µL		10mL	8.3mL	8.3mL
Method		Spin	Spin	Spin		Spin	Spin	Drip
% Protein Recovery					% Protein Recovery			
BSA 0.04mg/mL	40µL	70-80%	< 10%	< 10%	1.5mL	75-90%	20-30%	40-50%***
	80µL	80-95%	< 10%	< 10%	2.5mL	75-90%	30-40%	45-55%***
	120µL	> 90%	< 10%	< 20%	3.5mL	75-90%	60-70%*	55-65%*
BSA 0.2mg/mL	40µL	70-80%	< 15%	25-35%	1.5mL	> 90%	60-70%	> 90%***
	80µL	80-95%	30-45%	45-60%	2.5mL	> 90%	70-80%	85-95%***
	120µL	> 90%	55-70%	65-80%	3.5mL	> 90%	75-85%**	75-85%**
BSA 1mg/mL	40µL	80-95%	45-60%	70-80	1.5mL	> 90%	80-90%	> 90%***
	80µL	> 90%	60-75%	80-90	2.5mL	> 90%	80-90%*	> 90%***
	120µL	> 90%	75-90%	> 90%	3.5mL	> 90%	80-90%*	85-95%*
HeLa Lysate 0.2mg/mL**	40µL	45-55%	< 10%	< 15%	1.5mL	70-85%	55-65%	> 90%***
	80µL	60-70%	15-25%	30-40%	2.5mL	70-85%	65-75%	80-95%***
	120µL	70-80%	45-55%	50-60%	3.5mL	80-95%	70-80%*	75-85%*
HeLa Lysate 1mg/mL**	40µL	65-75%	45-55%	45-55%	1.5mL	80-95%	80-90%	> 90%***
	80µL	75-85%	60-70%	70-80%	2.5mL	80-95%	80-95%	> 90%***
	120µL	80-90%	70-80%	80-90%	3.5mL	85-95%	80-95%*	85-95%*

* Note: Above the recommended sample volumes for the columns tested and would result in insufficient salt removal.

They are included only to help demonstrate the effect of small volume on protein recovery.

**Note: Recoveries with lysate are typically slightly lower than those seen with individual proteins due to the loss of small molecular weight compounds and lysis contaminants that can influence protein assay results.

***Note: Sample diluted during processing and recovered in 3.5mL final volume. Protein recovery determined on total final volume.

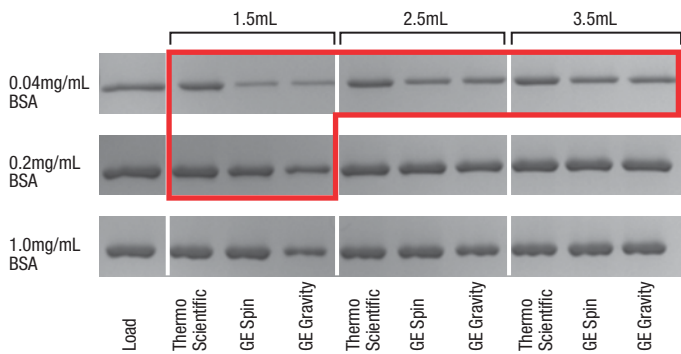


Figure 3. Thermo Scientific Zeba Spin Desalting Columns provide a high protein recovery while providing minimal sample dilution over a wider range of sample concentrations and volumes compared to alternative products. Zeba Spin Desalting Columns, 10mL (7K MWCO) (Product # PI89893) and GE PD-10 Columns were used to desalt 1.5, 2.5 and 3.5mL BSA samples at a concentration of 0.04, 0.2 and 1mg/mL. Desalting was performed according to the manufacturers' recommended protocols, both the spin and gravity protocols were used for the GE PD-10. Protein recovery was analyzed by SDS-PAGE. For each electrophoresis gel, an aliquot of starting sample equal to 1µg of BSA was loaded in Lane 1 as the Load Control; all other desalted samples were loaded in the gel at the same volume as the Load Control. Differences in intensity between lanes are a combination of protein recovery and sample dilution caused by desalting. The largest differences in recovery and concentration were noticed in the highlighted area.

Table 5. Comparison of protein recovery, from the 7K MWCO and 40K MWCO, 0.5mL Thermo Scientific Zeba Spin Desalting Columns.

Recovery of	Concentration Loaded	Size of Molecule	Typical % Recovered From 100µL Sample	
			7K Zeba Column	40K Zeba Column
Ubiquitin	0.5mg/mL	8.7kD	75%	60%
α-Lactalbumin	1.0mg/mL	14.1kD	85%	75%
Soybean Trypsin Inhibitor	0.5mg/mL	20.1kD	85%	65%
Carbonic Anhydrase	0.5mg/mL	29kD	90%	75%
Ovalbumin	0.5mg/mL	44kD	90%	85%
Bovine Serum Albumin	0.5mg/mL	66kD	> 90%	> 90%
Human IgG	0.5mg/mL	150kD	> 90%	> 90%

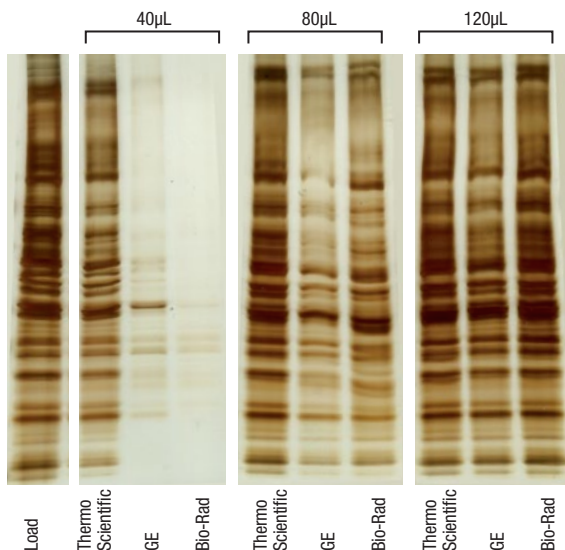


Figure 4. Better performance with Thermo Scientific Zeba Spin Desalting Columns. Zeba Spin Desalting Columns provide a high protein recovery while providing minimal sample dilution over a wider range of sample concentrations and volumes compared to alternative products. Zeba Spin Desalting Columns, 0.5mL (7K MWCO)(Product # PI89882), GE SpinTrap G-25 and Bio-Rad Micro BioSpin 6 spin columns were used to desalt 40, 80 and 120µL samples of a HeLa lysate at a concentration of 0.2 and 1mg/mL. Desalting was performed according to the manufacturers' recommended protocols. Protein recovery was analyzed by SDS-PAGE. For each electrophoresis gel, an aliquot of starting sample equal to 1µg of HeLa lysate was loaded in Lane 1 as the Load Control; all other desalted samples were loaded in the gel at the same volume as the Load Control. Differences in intensity between lanes are a combination of protein recovery and sample dilution caused by desalting.

Table 6. Comparison of small molecule removal, for the 7K MWCO and 40K MWCO, 0.5mL Thermo Scientific Zeba Spin Desalting Columns.

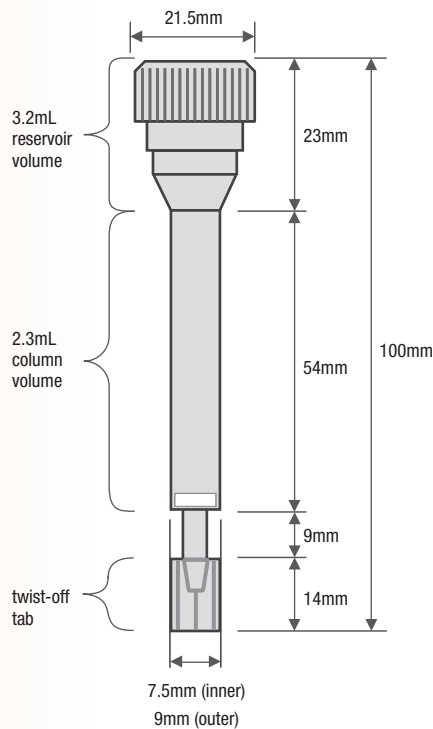
Removal of	Concentration Loaded	Size of Molecule	Typical % Removed From 100µL Sample	
			7K Zeba Column	40K Zeba Column
NaCl	1M	58.44Da	> 99%	> 99%
Dithiothreitol	0.5M	154Da	99%	99%
Sulfo-NHS-LC-Biotin	0.27mM	557Da	85%	85%
Dy549 Dye	0.2mM	1026Da	75%	90%
Bacitracin	0.5mg/mL	1200Da	75%	95%
Vitamin B12	0.5mg/mL	1386-Da	85%	95%

Multiple formats for sample processing

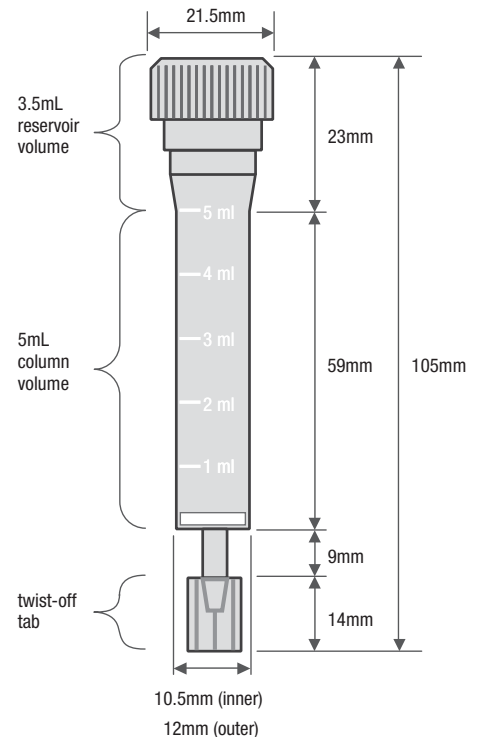
Zeba Spin Desalting Columns are made of low protein binding polypropylene and are compatible with a wide range of standard laboratory instruments and consumables. The Zeba Spin Desalting Columns and plates are designed to be compatible with most swinging-bucket or fixed-angle bench or floor model centrifuges; however, proper head clearance should be verified before use. The dimensions and details of each device are provide in the diagrams below.

The pre-packed Zeba Spin Desalting Columns are available in five different spin column sizes for processing samples from 2µL-4000µL. Each column is designed to rest on top and remain centered in a variety of commonly available collection tubes. The 75µL and 0.5mL spin columns (volume refers to resin bed) are designed to be compatible with most 1.5mL to 2mL microcentrifuge tubes. The 2mL and 5mL spin columns are compatible with 15mL conical collection tubes. The 10mL spin columns are compatible with 50mL conical collection tubes.

Thermo Scientific Zeba Spin Desalting Columns, 2mL
Total column capacity = 5.5mL



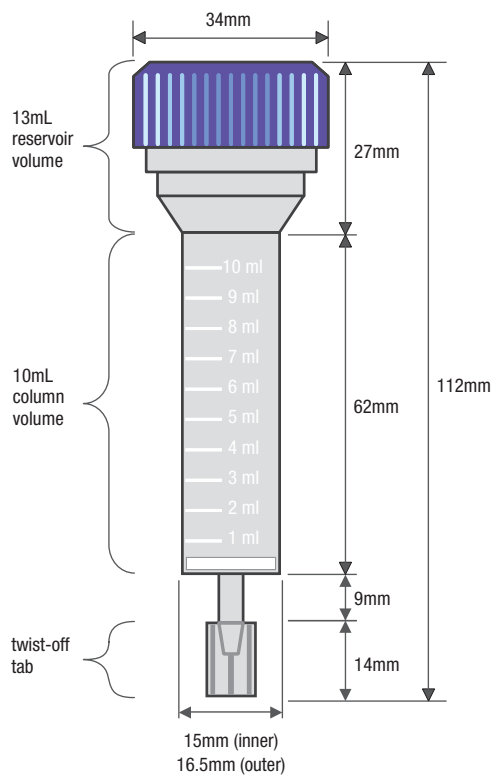
Thermo Scientific Zeba Spin Desalting Columns, 5mL
Total column capacity = 8.5mL





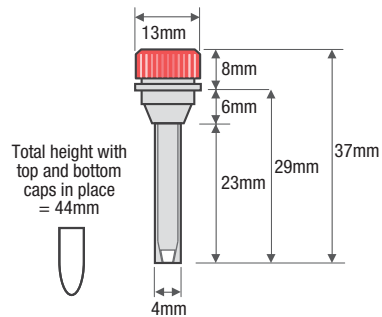
Thermo Scientific Zeba Spin Desalting Columns, 10mL

Total column capacity = 23mL



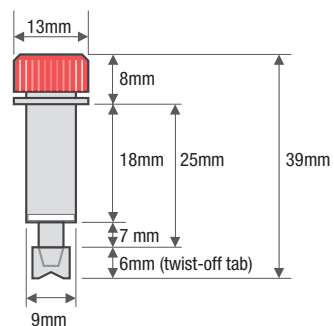
Thermo Scientific Zeba Micro Spin Desalting Columns, 75µL

Total column capacity = 0.4mL
(resin bed = 0.1mL; reservoir = 0.3mL)



Thermo Scientific Zeba Spin Desalting Columns, 0.5mL

Total column capacity = 0.8mL



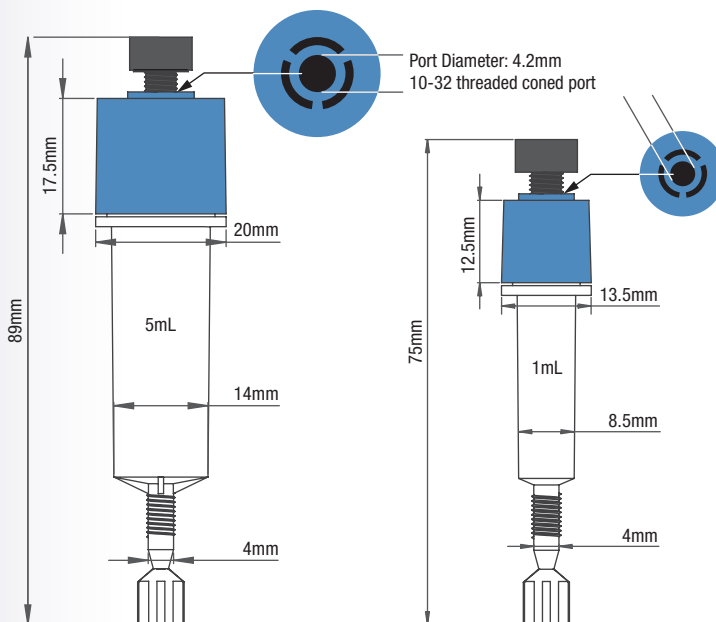
Automated sample processing

Thermo Scientific™ Zeba™ Desalting Chromatography Cartridges are available pre-packed in 1mL and 5mL sizes. They can be regenerated for multiple uses and efficiently process samples from 50 to 1500µL. Zeba Desalting Chromatography Cartridges can be processed manually or by automated liquid chromatography (LC) systems. The cartridges attach directly to the ÄKTA FPLC™ System from GE Healthcare or other FPLC Systems without additional connectors. Cartridge products include an accessory pack of tubing fittings and Luer-Lok™ fittings that provide compatibility with the other popular LC systems and manual syringe processing. They are available only in the 7K MWCO resin.

Table 7. Thermo Scientific Zeba Chromatography Cartridge properties. Recommended and maximum flow rates are general; values differ slightly for individual products.

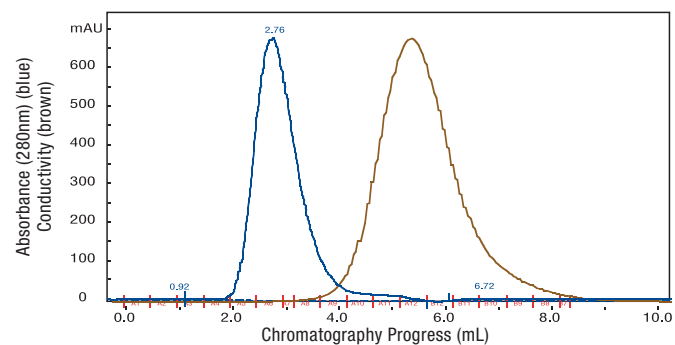
Feature	1mL Cartridge	5mL Cartridge
Dimensions	0.7 x 2.7cm	1.3 x 3.8cm
Desalting Flow Rate (Maximum)	0.2 to 1mL/minute (3mL/minute)	1 to 5mL/minute (8mL/minute)
Affinity Flow Rate (Maximum)	0.1 to 1mL/minute (4mL/minute)	0.5 to 2mL/minute (5mL/minute)
Maximum Pressure	0.3mPa (43 psi or 3 bar)	0.3mPa (43 psi or 3 bar)
Cartridge Material	polypropylene	polypropylene
Frit Material	polyethylene	polyethylene

Thermo Scientific Zeba Chromatography Cartridges

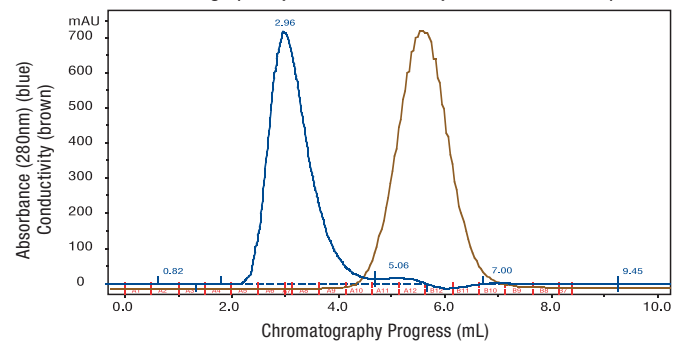




A. Thermo Scientific Pierce Cartridge (Thermo Scientific Zeba Resin, 7K MWCO)



B. GE Healthcare Cartridge (HiTrap™ Column with Sephadex™ G-25 Resin)



C. Bio-Rad™ Cartridge (Bio-Scale™ Mini Cartridge with Bio-Gel™ P-6 Resin)

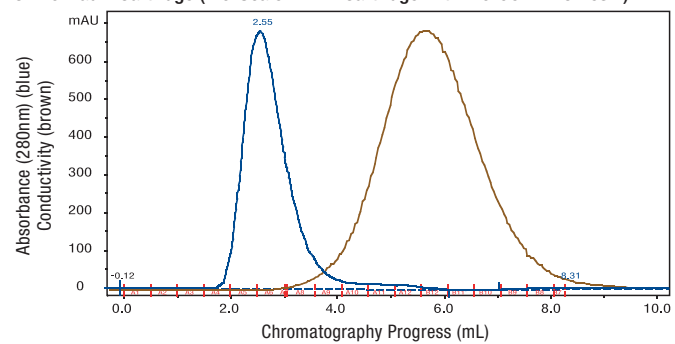


Figure 5. Efficient salt removal and protein recovery with Thermo Scientific Zeba Desalting Chromatography Cartridge. Bovine serum albumin (1mg) in 1M NaCl was applied to 5mL Zeba Desalting Cartridge (Product # PI89935) (A) at a flow rate of 5mL/minute. Cartridge profile shows isocratic elution of BSA (blue) and NaCl detected by conductivity (brown). Greater than 95% of the BSA was recovered and more than 95% of the salt was removed. Results for the Pierce Cartridge (A) were essentially identical to those obtained with the more expensive GE Healthcare (B) and Bio-Rad (C) products.

High-throughput sample processing

The pre-packed **Thermo Scientific™ Zeba™ 96-well Spin Desalting Plates** do not require resin hydration or dispensing and provide the same high protein recovery as Zeba Spin Desalting Columns. Each Zeba Spin Desalting Plate can process up to 96 samples (20 to 100µL) in as few as 10-20 minutes. A collection plate is provided with each filter plate.

Table 8. Common specifications of Thermo Scientific Zeba 96-well Filter Plates.

Plate Dimensions (l x w x h)[†]	127.76 x 85.5 x 45mm ± 0.25mm
Well Depth	27.11 ± 0.10mm
Well Diameter	7 ± 0.10mm
Well Off-set	9mm
Well Volume	800µL
Plate Material	polypropylene
Filter Material	polyethylene
Filter Pore Size	20µm
Collection Plate Maximum Volume	150µL
Max Centrifuge Speed	up to 1000 x <i>g</i>
Suggested Balance Plate	use Product # PI45205

[†] Plate height includes collection plate for total stack height



Ordering Information

Product #	Description	Pkg. Size
PI89877	Zeba Micro Spin Desalting Columns, 7K MWCO, 75µL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 2 to 12µL</i>	25 columns
PI89878	Zeba Micro Spin Desalting Columns, 7K MWCO, 75µL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 50 samples, each 2 to 12µL</i>	50 columns
PI89882	Zeba Spin Desalting Columns, 7K MWCO, 0.5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 30 to 130µL</i>	25 columns
PI89883	Zeba Spin Desalting Columns, 7K MWCO, 0.5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 50 samples, each 30 to 130µL</i>	50 columns
PI89889	Zeba Spin Desalting Columns, 7K MWCO, 2mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 200 to 700µL</i>	5 columns
PI89890	Zeba Spin Desalting Columns, 7K MWCO, 2mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 200 to 700µL</i>	25 columns
PI89891	Zeba Spin Desalting Columns, 7K MWCO, 5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 500 to 2000µL</i>	5 columns
PI89892	Zeba Spin Desalting Columns, 7K MWCO, 5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 500 to 2000µL</i>	25 columns
PI89893	Zeba Spin Desalting Columns, 7K MWCO, 10mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 700µL to 4mL</i>	5 columns
PI89894	Zeba Spin Desalting Columns, 7K MWCO, 10mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 700µL to 4mL</i>	25 columns
PI89807	Zeba Spin Desalting Plates, 7K MWCO Formulation: Polypropylene high-profile 96-well filter plates containing 550µL resin; Polypropylene wash and collection plates <i>Sufficient for 2 × 96 samples, each 20 to 100µL</i>	2 plates
PI89808	Zeba Spin Desalting Plates, 7K MWCO Formulation: Polypropylene high-profile 96-well filter plates containing 550µL resin; Polypropylene wash and collection plates <i>Sufficient for 4 × 96 samples, each 20 to 100µL</i>	4 plates
PI89934	Zeba Desalting Chromatography Cartridges, 7K MWCO, 1mL Formulation: Polypropylene cartridge with proprietary resin <i>Sufficient for samples requiring 1mL of resin for separation</i>	5 cartridges
PI89935	Zeba Desalting Chromatography Cartridges, 7K MWCO, 5mL Formulation: Polypropylene cartridge with proprietary resin <i>Sufficient for samples requiring 5mL of resin for separation</i>	5 cartridges
PI87764	Zeba Micro Spin Desalting Columns, 40K MWCO, 75µL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 5 to 14µL</i>	25 columns
PI87765	Zeba Micro Spin Desalting Columns, 40K MWCO, 75µL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 50 samples, each 5 to 14µL</i>	50 columns
PI87766	Zeba Spin Desalting Columns, 40K MWCO, 0.5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 70 to 200µL</i>	25 columns
PI87767	Zeba Spin Desalting Columns, 40K MWCO, 0.5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 50 samples, each 70 to 200µL</i>	50 columns
PI87768	Zeba Spin Desalting Columns, 40K MWCO, 2mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 200 to 900µL</i>	5 columns
PI87769	Zeba Spin Desalting Columns, 40K MWCO, 2mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 200 to 900µL</i>	25 columns
PI87770	Zeba Spin Desalting Columns, 40K MWCO, 5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 300 to 2000µL</i>	5 columns
PI87771	Zeba Spin Desalting Columns, 40K MWCO, 5mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 300 to 2000µL</i>	25 columns
PI87772	Zeba Spin Desalting Columns, 40K MWCO, 10mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 5 samples, each 1mL to 4mL</i>	5 columns

Product #	Description	Pkg. Size
PI87773	Zeba Spin Desalting Columns, 40K MWCO, 10mL Formulation: Polypropylene columns with proprietary resin <i>Sufficient for 25 samples, each 1mL to 4mL</i>	25 columns
PI87774	Zeba 96-well Spin Desalting Plates, 40K MWCO Formulation: Polypropylene high-profile 96-well filter plates containing resin; Polypropylene wash and collection plates <i>Sufficient for 2 × 96 samples, each 20 to 100µL</i>	2 plates
PI87775	Zeba 96-well Spin Desalting Plates, 40K MWCO Formulation: Polypropylene high-profile 96-well filter plates containing resin; Polypropylene wash and collection plates <i>Sufficient for 4 × 96 samples, each 20 to 100µL</i>	4 plates

Related Products

PI43230	Dextran Desalting Columns, 5K MWCO, 5mL Formulation: Polypropylene columns with dextran resin <i>Sufficient for 5 samples, each 0.25 to 1.25mL</i>	5 columns
PI43233	Dextran Desalting Columns, 5K MWCO, 10mL Formulation: Polypropylene columns with dextran resin <i>Sufficient for 5 samples, each 0.5 to 2.5mL</i>	5 columns
PI89849	Polyacrylamide Spin Desalting Columns, 7K MWCO, 0.7mL Formulation: Polypropylene columns with polyacrylamide resin <i>Sufficient for 25 samples, each 30 to 120µL</i>	25 columns
PI89862	Polyacrylamide Spin Desalting Columns, 7K MWCO, 0.7mL Formulation: Polypropylene columns with polyacrylamide resin <i>Sufficient for 50 samples, each 30 to 120µL</i>	50 columns
PI43426	Polyacrylamide Desalting Columns, 1.8K MWCO, 5mL Formulation: Polypropylene columns with polyacrylamide resin <i>Sufficient for 5 samples, each 0.25 to 1.25mL</i>	5 columns
PI43240	Polyacrylamide Desalting Columns, 6K MWCO, 5mL Formulation: Polypropylene columns with polyacrylamide resin <i>Sufficient for 5 samples, each 0.25 to 1.25mL</i>	5 columns
PI43243	Polyacrylamide Desalting Columns, 6K MWCO, 10mL Formulation: Polypropylene columns with polyacrylamide resin <i>Sufficient for 5 samples, each 0.5 to 2.5mL</i>	5 columns
PI89879	Pierce Micro-Spin Columns Formulation: Polypropylene (400µL capacity); Polyethylene filter (30µm pore size); Screw caps with O-rings; Press-in bottom plugs <i>Sufficient for microcentrifuge procedures with 5 to 100µL resin</i>	50 columns
PI89868	Pierce Centrifuge Columns, 0.8mL Formulation: Polypropylene (800µL capacity); Polyethylene filter (30µm pore size); Screw-top caps <i>Sufficient for microcentrifuge procedures with 40 to 400µL resin beds</i>	50 columns
PI89869	Pierce Centrifuge Columns, 0.8mL Formulation: Polypropylene (800µL capacity); Polyethylene filter (30µm pore size); Screw-top caps <i>Sufficient for microcentrifuge procedures with 40 to 400µL resin beds</i>	4 x 50 columns
PI89896	Pierce Centrifuge Columns, 2mL Formulation: Polypropylene (5mL capacity); Polyethylene filter (30µm pore size); Screw-top and press-on bottom caps <i>Sufficient for centrifuge procedures with 2mL resin beds and 15mL conical centrifuge tubes for collection</i>	25 columns
PI89897	Pierce Centrifuge Columns, 5mL Formulation: Polypropylene (8mL capacity); Polyethylene filter (30µm pore size); Screw-top and press-on bottom caps <i>Sufficient for centrifuge procedures with 5mL resin beds and 15mL conical centrifuge tubes for collection</i>	25 columns
PI89898	Pierce Centrifuge Columns, 10mL Formulation: Polypropylene (22mL capacity); Polyethylene filter (30µm pore size); Screw-top and press-on bottom caps <i>Sufficient for centrifuge procedures with 10mL resin beds and 50mL conical centrifuge tubes for collection</i>	25 columns
PI69707	Pierce Column Extenders Formulation: Polypropylene (35mL capacity) to fit Product #s 89896, 89897, 89898 <i>Sufficient for increasing column reservoir volumes by approx. 35mL</i>	10 extenders



thermoscientific.com/pierce

References

- Schwartz, P.A., et al. (2014). *PNAS* **111**: 173-178.
- Wu, J., et al. (2013). *J. Biol. Chem.* **288**: 35904-35912.
- Issafiras, H., (2013). *J. Pharmacol. Exp. Ther.* **348**: 202-215.
- Olsson, N., et al. (2013). *Mol. Cell. Proteomics* **12**: 3612-3623.
- Rascoe, L.N., et al. (2013). *Clin. Vaccine Immunol.* **20**: 1758-1763.
- Andacht, T.M., et al. (2013). *J. Anal. Toxicol.* **10**:1093/jat/bkt088.
- Foo, J.Y.Y., et al. (2013). *Clin. Chem.* **59**: 1523-1531.
- Kryndushkin, D., et al. (2013). *J. Biol. Chem.* **288**: 27100-27111.
- Petitdemange, C., et al. (2013). *Clinical Infectious Diseases* **57**: 745-755.
- Albrecht, S.C., et al. (2013). *J. Biomol. Screen* **10**: 1177/1087057113499634.
- Gerdes, M.J., et al. (2013). *PNAS* **110**: 11982-11987.
- Palzer, S., et al. (2013). *Eukaryot. Cell* **12**: 816-827.
- Persson, H., et al. (2013). *Infect. Immun.* **81**: 2236-2241.
- Haeussler, D.J., et al. (2013). *J. Biol. Chem.* **288**: 15380-15389.
- Gavriljuk, J., et al. (2013). *J. Virol.* **87**: 4985-4993.
- Sinz, Q., et al. (2013). *Appl. Environ. Microbiol.* **79**: 2284-2293.
- Muretta, J.M., et al. (2013). *PNAS* **110**: 7211-7216.
- Frasier, C.R., et al. (2013). *Cardiovasc Res* **98**: 47-55.
- Birk, J., et al. (2013). *J. Cell Sci.* **126**: 1604-1617.
- Labrijn, A.F., et al. (2013). *PNAS* **110**: 5145-5150.
- Shi, L., et al. (2013). *PNAS* **110**: 930-935.
- Kontos, S., et al. (2013). *PNAS* **110**: E60-E68.
- Yang, Y., et al. (2013). *Mol. Cell. Proteomics* **12**: 237-244.
- Paisley, A., et al. (2013). *PNAS* **109**: E3340-E3349.
- Kappel, L., et al. (2012). *J. Cell Biol.* **199**: 771-782.
- Vomaske, J., et al. (2012). *J. Virol.* **86**: 11833-11844.
- Fan, Y., et al. (2012). *Journal of Bioactive and Compatible Polymers*, **27**: 585-603.
- Xu, S., et al. (2012). *PNAS* **109**: 16348-16353.
- Bista, M., et al. (2012). *PNAS* **109**: 15752-15756.
- Mckinney, K.Q., et al. (2012). *Cancer Genomics Proteomics* **9**: 257-263.
- Suzuki, Y., et al. (2012). *Plant Physiology* **160**: 533-540.
- Qu, L., et al. (2012). *J. Neurosci.* **32**: 9554-9562.
- DiGiandomenico, A., et al. (2012). *J. Exp. Med.* **209**: 1273-1287.
- Gavin, J.M., et al. (2012). *J. Biol. Chem.* **287**: 15512-15522.
- Madabhushi, S.R., et al. (2012). *Blood* **119**: 4769-4778.
- Rodríguez-Rubio, L., et al. (2012). *Appl. Environ. Microbiol.* **78**: 2241-2248.
- Zumer, K., et al. (2012). *Mol. Cell. Biol.* **32**: 1354-1362.
- Woods, R.J., et al. (2012). *Journal of Diabetes Science and Technology* **6**: 265-276.
- Burgoyne, J.R., et al. (2012). *FASEB J* **26**: 832-841.
- Antonucci, F., et al. (2012). *J. Neurosci.* **32**: 1989-2001.
- Liu, Y., et al. (2011). *J. Nucl. Med.* **52**: 1956-1963.
- Ho, A.W.S., et al. (2011). *J. Immunol.* **187**: 6011-6021.
- Zhang, H., et al. (2011). *Mol. Pharmacol.* **80**: 839-847.
- Liu, H., et al. (2011). *PNAS* **108**: 18536-18541.
- Olsson, N., et al. (2011). *Mol. Cell. Proteomics* **10**: M110.003962.
- Skipsey, M., et al. (2011). *J. Biol. Chem.* **286**: 32268-32276.
- Mazier, S., et al. (2011). *J. Biol. Chem.* **286**: 29347-29355.
- Lin, A.Y., et al. (2011). *PNAS* **108**: 12729-12733.
- Goyal, A., et al. (2011). *J. Biol. Chem.* **286**: 25947-25962.
- Vinegoni, G., et al. (2011). *Science Translational Medicine* **3**: 84ra45.
- Murray, C.I., et al. (2011). *Mol. Cell. Proteomics* **10**: M110.004721.

thermoscientific.com/pierce

© 2014 Thermo Fisher Scientific Inc. All rights reserved. These products are supplied for laboratory or manufacturing applications only. ÄKTAFLC, Hi-Trap, Sephadex and Spin-Trap are trademarks of GE Healthcare. Bio-Gel, Bio-Rad, Bio-Scale, Bio-Spin and Micro Bio-Spin are trademarks of Bio-Rad Corporation. Luer-Lok is a trademark of Becton, Dickinson and Company. All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.



In the United States:

For customer service, call 1-800-766-7000
 To fax an order, use 1-800-926-1166
 To order online: www.fishersci.com

In Canada:

For customer service, call 1-800-234-7437
 To fax an order, use 1-800-463-2996
 To order online: www.fishersci.com

Thermo
 SCIENTIFIC
 Part of Thermo Fisher Scientific