

ProtEx Ion Exchange HPLC Columns

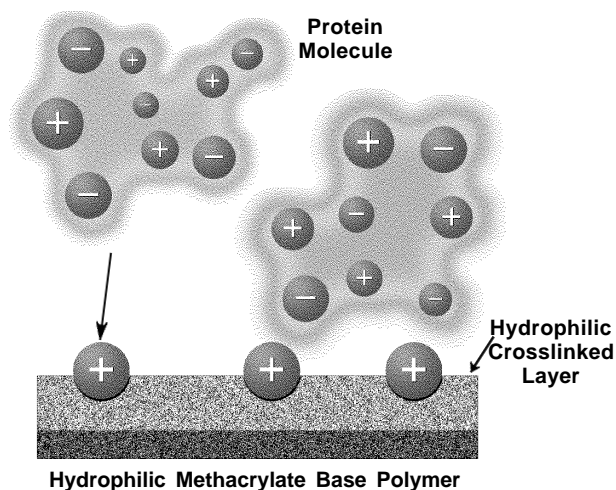
Product Specification

In ion exchange purifications and analyses of biopolymers, MCI GEL ProtEx-DEAE and ProtEx-SP columns offer significant benefits:

- Excellent separations of protein isoforms
- High resolution at low sample load
- Quantitative recovery (a hydrophilic surface eliminates protein adsorption)
- High efficiency (plate number)

ProtEx columns are packed with high performance, monodispersed, macroporous polymethacrylate beads with a chemically bonded, crosslinked hydrophilic surface (Table 1). Two functionalities are available: an anion exchanger, DEAE (diethylaminoethyl), and a cation exchanger, SP (sulfopropyl). The hydrophilic crosslinked surface layer allows pure ion exchange interactions (Figure A) and quantitative recovery of proteins, even at low loading (Figure B). The column hardware is biocompatible PEEK (polyetheretherketone).

Figure A. High Resolution of Proteins with "Pure" Ion Exchange Interaction



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Table 1. Characteristics of ProtEx Columns

Stationary Phase:	diethylaminoethyl (anion exchanger) sulfopropyl (cation exchanger)
Particles:	5µm, 1000Å pores
Dimensions:	5.0cm x 4.6mm ID
Bed Volume:	0.83mL
Flow Range:	0.5-1.5mL/min
Maximum Backpressure:	735psi (4.9MPa)
Temperature Range:	4°C-50°C
pH Range:	2-11
Maximum Load:	10mg protein/injection

Figure B. Quantitative Recovery of Epidermal Growth Factor (EGF) at Loadings as Low as 1µg – A Benefit of the Hydrophilic Surface of ProtEx Columns

Column: ProtEx-DEAE, 5cm x 4.6mm ID, 5µm particles
Cat. No.: 54742
Mobile Phase: A = 20mM Tris-HCl, pH 8.2
B = A + 0.5M NaCl
0-50% B over 30 min
Flow Rate: 0.5mL/min

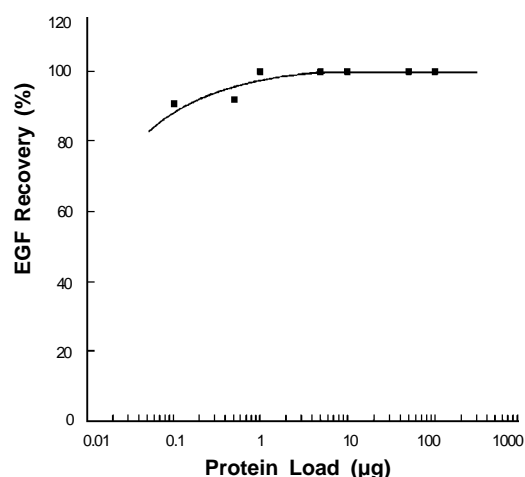


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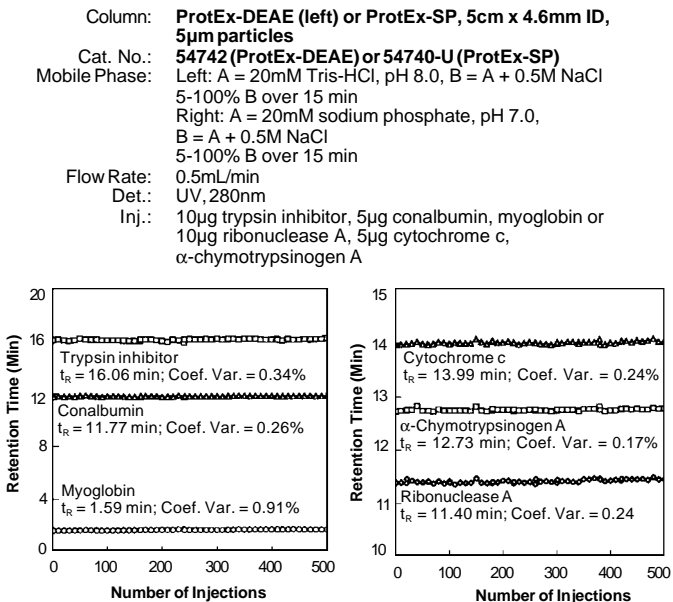
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Each lot of ProtEx packing material is tested for protein separation and ion exchange capacity, and each ProtEx column is tested for chromatographic performance. Column durability and consistency of performance are excellent. Figures C and D (next page) show the uniform performance of each column over a series of 500 injections of protein standards. Mean retention times and coefficients of variation were calculated from every tenth injection. The chromatograms in Figure D are for the 500th injection on each column.

ProtEx columns are especially effective for high resolution ion exchange applications, such as separating protein isoforms, isozymes, or DNA fragments, and determining protein purity. Protein isoforms have subtle differences in amino acid sequence, post-translational modification, and degradation that can affect enzymatic activity, genetic diseases, etc. Figure E shows the separation of cytochrome c isoforms on a ProtEx-SP column. Purity of a recombinant protein, human growth hormone, is evaluated in Figure F.

Contact our Technical Service Department (phone 800-359-3041 or 814-359-3041, FAX 800-359-3044 or 814-359-5468) for expert answers to your questions.

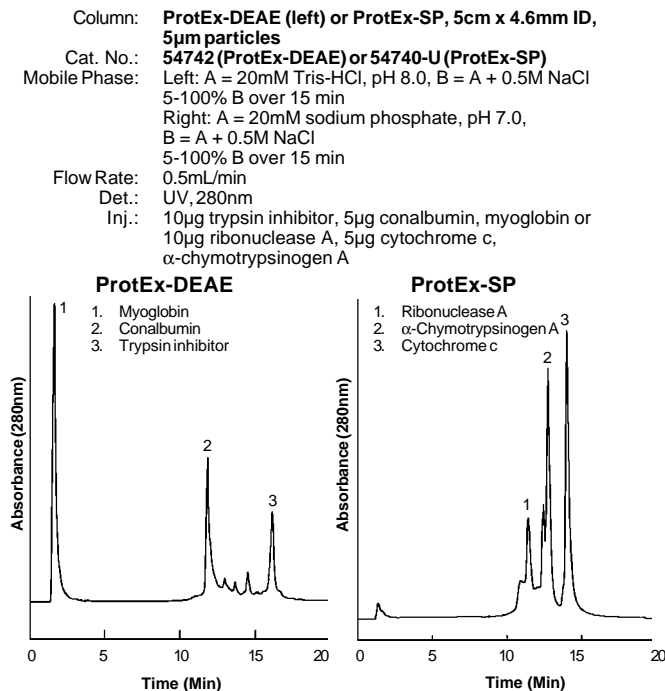
Figure C. Consistent Performance of ProtEx Columns



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Figure D. Durability of ProtEx Columns: 500th Injection



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Figure E. Cytochrome c Species Variants by Ion Exchange HPLC

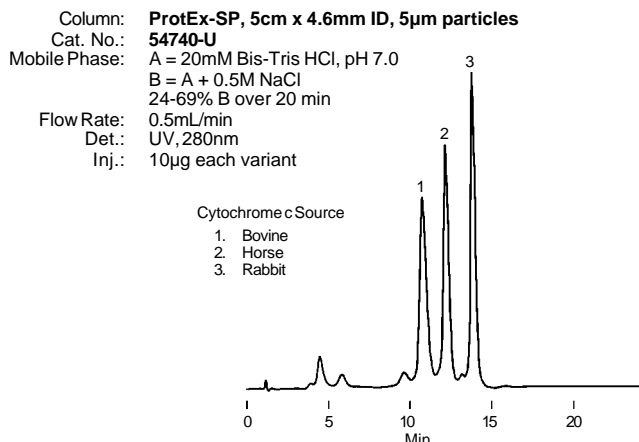


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Figure F. Purity Evaluation of Human Growth Hormone (hGH)

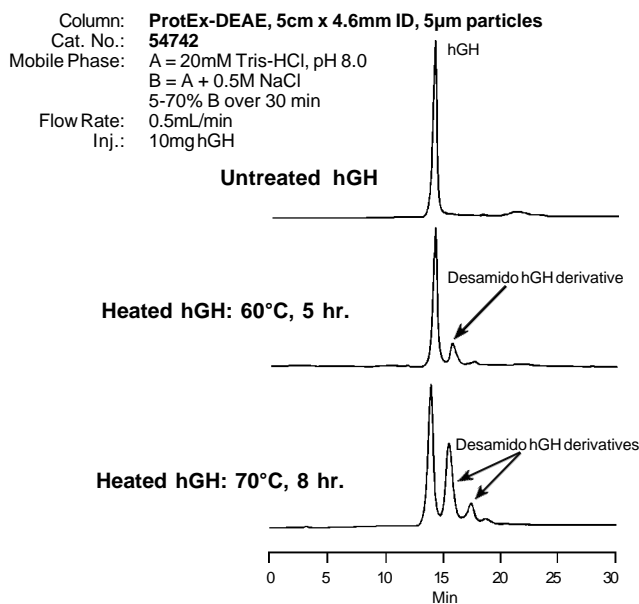


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Ordering Information:

Description	Cat. No.
ProtEx Ion Exchange HPLC Columns, 5cm x 4.6mm ID	
ProtEx-DEAE	54742
ProtEx-SP	54740-U

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