

Bio-Scale DEAE Columns



■ Introduction

Bio-Scale prepacked ion-exchange columns meet the needs of the bio-chromatographer for rapid and reproducible high resolution separations of biomolecules including proteins, peptides, and polynucleotides. Bio-Scale DEAE columns are packed with the spherical, rigid weak anion exchange Macro-Prep® DEAE support which binds strongly negatively charged biomolecules through diethylaminoethyl groups. The 10 μ m particle size and narrow particle size distribution produces excellent resolution of biomolecules at high flow rates and with very low backpres-

ures. The hydrophilic Macro-Prep DEAE support demonstrates extremely low non-specific binding of biomolecules accompanied by high recovery of biological activity.

■ Scale-up

The availability of four column sizes (bed volumes of 2, 5, 10, and 20 ml) provides unrivaled flexibility for the economical and predictable scale up of separation and purification protocols without sacrificing resolution due to overloading (see Figure 1).

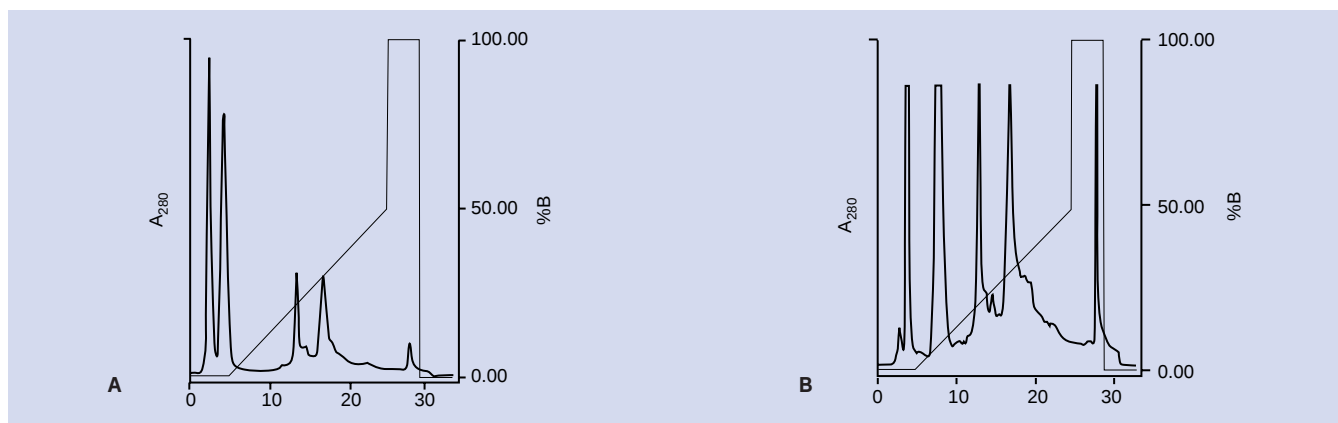


Fig. 1. Yeast enzyme extract separation. Scale-up from 4 mg to 40 mg of yeast enzyme concentrate using the Bio-Scale DEAE columns. **A:** Bio-Scale DEAE2 column, 4 mg of sample, Buffer A: 20 mM Tris-HCl, pH 7.6, Buffer B: A + 1 M NaCl, Flow rate: 1 ml/min. **B:** Bio-Scale DEAE20 column, 40 mg of sample, 4.6 ml/min.

■ Stability of the Macro-Prep 10 DEAE Support

The columns are stable over the pH range 2–12, allowing easy cleaning and regeneration. The Macro-Prep 10 support is compatible with aqueous solutions of guanidine-HCl and urea. Non-ionic and cationic detergents and organic solvents such as methanol, ethanol and isopropanol may also be used.

■ Top-Off Resin

When the top of the resin bed becomes fouled and conventional hygiene steps do not restore performance, then a few millimeters of the bed can be removed and replaced with fresh resin obtainable from Bio-Rad.

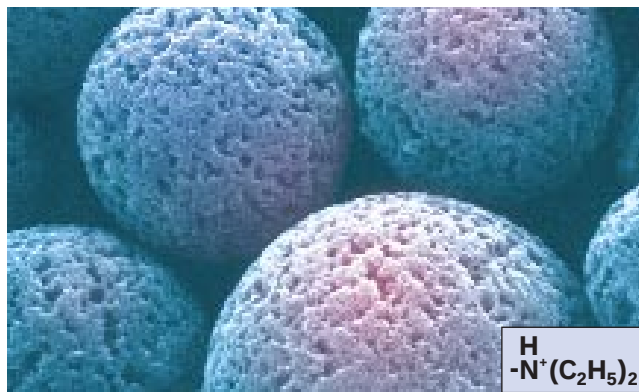
■ Convenience

The Bio-Scale column's unique design offers convenience when working with medium or high pressure systems:

- Biocompatible materials preserve the protein's integrity
- Four sizes available (2, 5, 10, and 20 ml) for easy scale-up
- Fingertight fittings eliminate the need for tools
- Adjustable bed support minimizes column voids

Table 1. Properties of Macro-Prep 10 DEAE support

Type of exchanger	Weak anion
Functional group	$-\text{N}^+(\text{C}_2\text{H}_5)_2$
Ionic capacity ($\mu\text{mol/ml}$)	220 ± 40
Average particle size (μm)	10 ± 3.0
Static protein capacity	25 mg BSA /ml
Counterion	Cl^-



■ The Macro-Prep DEAE Family

For your low pressure laboratory scale protein purification, the Macro-Prep DEAE support is also available in a 50 μm particle size. This support is available in 100 g and 500 g bottles and in bulk for your scale-up and process scale applications. All of the Macro-Prep supports are produced under GMP and have Drug Master Files. For more information, contact your local Bio-Rad office.

Ordering Information

Catalog Number	Column Name	Column Dimension	Bed Volume	Recommended Protein Loading	Recommended Flow Rate (ml/min)	Maximum Operating Pressure
751-0031	Bio-Scale DEAE2 Column	7 x 52 mm	2 ml	25 mg	0.5–3.0	1000 psi
751-0033	Bio-Scale DEAE5 Column	10 x 64 mm	5 ml	125 mg	0.5–5.0	750 psi
751-0035	Bio-Scale DEAE10 Column	12 x 88 mm	10 ml	250 mg	0.5–7.0	600 psi
751-0037	Bio-Scale DEAE20 Column	15 x 113 mm	20 ml	500 mg	0.5–10.0	500 psi
751-0039	Top-off resin kit DEAE, 1 ml					

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