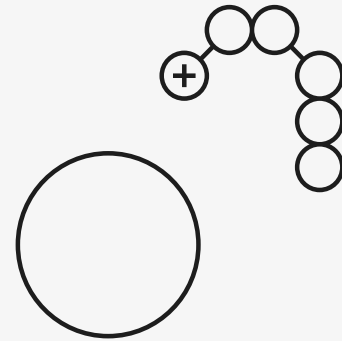


Multimodal ion exchange chromatography

Multimodal ion exchange chromatography is also referred to as mixed-mode ion exchange chromatography. It utilizes ionic interaction in combination with hydrophobic and other types of interactions. The combined effect gives the resin unique selectivities that adds new possibilities in biomolecule separation.

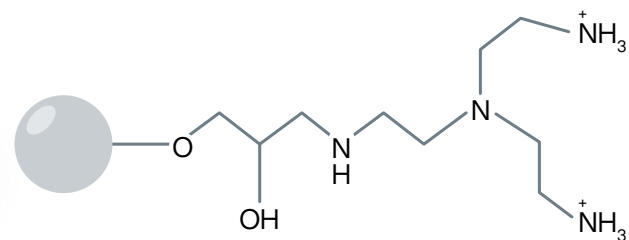
Target molecules

WorkBeads 40 TREN resin has a ligand that is positively charged below approx. pH 9. This resin can be used for several different applications, especially due to its higher salt tolerant properties, e.g., for alternative IEX selectivity, for sample cleanup in monoclonal antibody (mAb) purification processes to guard the protein A column from viruses and other host cell impurities, or as a polishing step in the mAb purification process.



WorkBeads 40 TREN

- Differential selectivity due to higher salt tolerance and multimodal properties
- Reduced fouling of e.g. protein A resins by viruses and host cell impurity removal
- High binding capacity and purity
- Available in several different GoBio prepacked columns



Structure of the ligand used in WorkBeads 40 TREN.

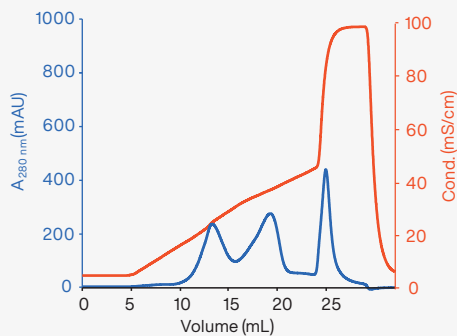


Applications

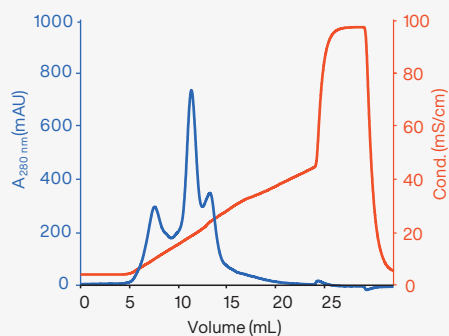
Comparison of prepacked GoBio Mini TREN and GoBio Mini DEAE

Columns: GoBio Mini TREN 1 mL
GoBio Mini DEAE 1 mL
Binding buffer: 50 mM Tris-HCl, pH 7.4
Elution buffer: 50 mM Tris-HCl, 1M NaCl, pH 7.4
Sample: 2.5 mL of 0.3 mg/mL apo-transferrin,
0.2 mg/mL α -lactalbumin, 0.6 mg/mL soybean
trypsin inhibitor in binding buffer
Flow rate: 1 mL/min (150 cm/h)
Gradient: 0 to 40% elution buffer in 20 CV

GoBio Mini TREN



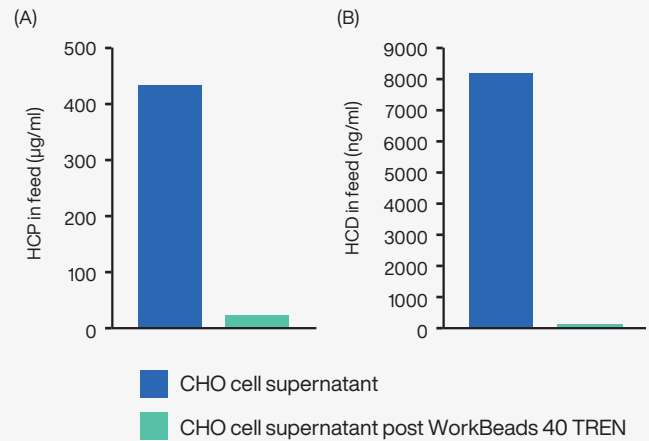
GoBio Mini DEAE



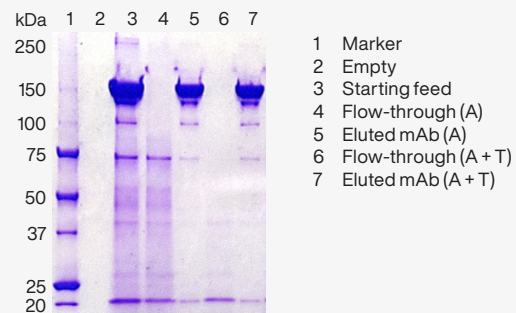
The peaks from left to right correspond to apo-transferrin, α -lactalbumin and soybean trypsin inhibitor. The blue line corresponds to the absorbance at 280 nm and the red line to the conductivity.

Using WorkBeads 40 TREN as a guard column before protein A

Using WorkBeads 40 TREN upstream of protein A resins is an excellent option for eliminating the extensive bioburden on the protein A resin caused by the impurities from the host cells, and thus extending the lifetime of the protein A resin. The advantage of using WorkBeads 40 TREN upstream of WorkBeads affmAb is shown below. In this experiment up to 95% of HCP and 99% of HCD have been removed from the mAb feed loaded onto the protein A resin.



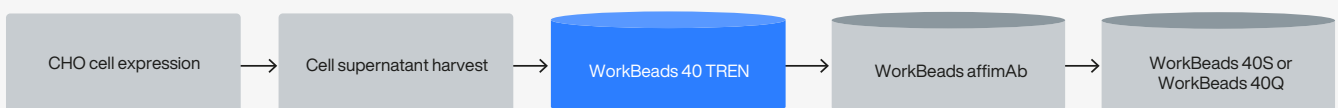
(C)



Levels of impurities in CHO cell supernatant before and after WorkBeads 40 TREN treatment. (A) HCP and (B) HCD in mAb sample loaded onto the protein A resin. (C) SDS-PAGE analyses of the feed, flow-through and eluted mAb, with or without WorkBeads 40 TREN (T) upstream of WorkBeads affmAb (A).

Example of usage of WorkBeads 40 TREN in mAb purification processes

Flow-through mode, protection of Protein A resin (guard column).



Technical specifications

WorkBeads 40 TREN	
Matrix	Rigid, highly cross-linked agarose
Average particle size ¹ (D_{v50})	45 μm
Ligand	Tris(2-aminoethyl)amine (TAEA)
Ionic capacity	130 – 200 $\mu\text{mol Cl}^-/\text{mL resin}$
Dynamic binding capacity ²	50 mg BSA/mL resin
Maximum flow rate	600 cm/h (20 cm bed height, 5 bar)
Chemical stability	Compatible with all standard aqueous buffers used for protein purification. Should not be stored at low pH for prolonged time.
Operational pH range ³	2 to 13
CIP and screening pH range ³	2 to 14
Storage	2 to 25°C in 20% ethanol

¹ The median particle size of the cumulative volume distribution.

² Dynamic binding capacity determined at 4 minutes residence time (0.25 mL/min in 1 mL column) in 50 mM Tris-HCl, 50 mM NaCl, pH 8.0. Optimal flow rate during binding is depending on the sample.

³ Within the operational pH range, the resin can be operated without significant change in function. Within the CIP (Cleaning-in-place) and screening pH range the resin can be subjected to the denoted pH range without significant change in function.

Ordering information

	Pack size	Article number
WorkBeads 40 TREN	25 mL	40 603 001
	150 mL	40 603 003
	1 L	40 603 010
	5 L	40 603 050
	10 L	40 603 060



More information

Data Sheet, DS 40 600 020

WorkBeads 40 TREN, GoBio prepacked columns

Data Sheet, DS 40 100 010

WorkBeads 40S, WorkBeads 40Q,
WorkBeads 40 DEAE, GoBio Mini IEX Screening kit,
GoBio Mini Peptide Purification kit,
GoBio prepacked columns

→ bio-works.com/product/iex-resin

