ХРОМАТОГРАФИЧЕСКИЕ СРЕДЫ FRACTOGEL EMD

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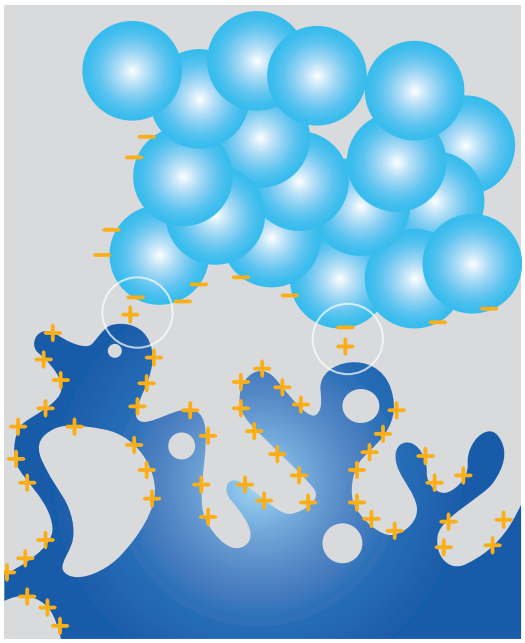
Fractogel® EMD Media:
The Reliable Chromatography tool

The matrix

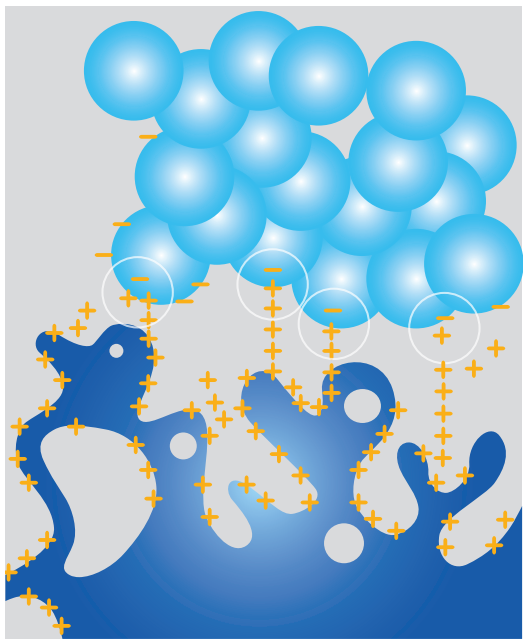
Fractogel® EMD media consist of synthetic methacrylate based polymeric beads providing excellent pressure stability resulting in high flow rates. Depending on your application, we can offer medium sized M-type beads with a particle size of 40-90 µm and small S-type beads with a particle size in the range of 20-40 µm.

The tentacles

The unique composition of Fractogel® EMD media creates a powerful tool for your purification strategy. Tentacles are long, linear polymer chains that carry the functional ligands. All tentacles are covalently attached to hydroxyl groups of the Fractogel® EMD matrix. This configuration provides a high surface area for biomolecules to bind accessible ligands without steric hindrance. A variety of ligands is available for different chromatography applications, including ion exchange, affinity, hydrophobic interaction, and size exclusion.



Conventional ion exchanger



Tentacle ion exchanger

Properties of Fractogel® EMD media types:

Particle size	S-type: 20–40 µm
	M-type: 40–90 µm
Pore size	about 800 Å
Matrix	crosslinked polymethacrylate
Working range	pH 2-12
Pressure limit	8 bar
Storage	20% ethanol, 150mM NaCl

Fractogel® EMD Media for Ion Exchange Chromatography

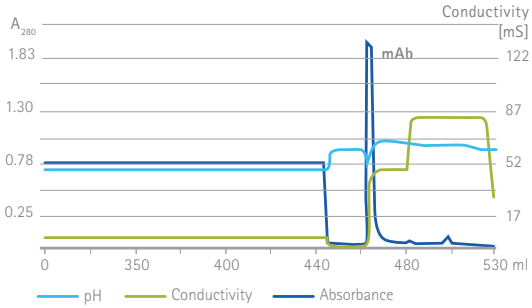


Figure 1. Capture of a monoclonal antibody on Fractogel® EMD SO_3 media
After equilibration (25 mM Sodium Phosphate buffer, pH 5.5) the sample containing 415 mg of protein (corresponding to 30 mg mAb) was loaded onto the column. Subsequently, the column was washed with equilibration buffer, the elution of 94% purified antibody was achieved using a salt gradient (25 mM Sodium Phosphate buffer/ 0.5 M NaCl, pH 7)

Ion exchange chromatography (IEX) is a robust, efficient technique for separating molecules based on charge. Two exchange types are differentiated: basic (positively charged, or cationic) and acidic (negatively charged, or anionic). They in turn can be divided into those with weakly basic or acidic or strongly basic or acidic functional groups. With the latter, the functional groups are always present in ionized form, independent from the pH value in the specified operating range. Ion exchange chromatography can be operated in either binding or flow-through mode.

Main application areas for Fractogel® EMD Ion Exchange Media

- Isolation of native and recombinant proteins from different sources (e.g. cell culture supernatant, microbial expression systems, inclusion bodies, plasma, plants, tissue, etc.)
- Efficient purification of peptides and low molecule weight substances (e.g. NADP, ATP, gangliosides, etc.)
- Excellent log reduction of DNA, endotoxins and host cell proteins
- Safe removal of viruses
- Well suited for efficient purification of monoclonal antibodies

Fractogel® EMD Media for Metal Chelate Affinity Chromatography

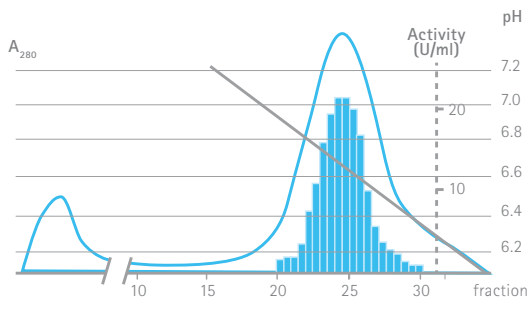


Figure 2. Purification of glucokinase from yeast using Fractogel® EMD Chelate media. The metal chelate chromatography was performed on immobilized cobalt ions. The purified enzyme can be eluted in a peak during a decreasing pH-gradient. 20 mM phosphate buffer with 1 M KCl and 10 mM glucose at pH 7.5 was used as buffer A. Buffer A, which was adjusted to a pH value of 6.0, was used for elution.

For Fractogel® EMD Chelate, iminodiacetic acid has been chosen as the functional affinity ligand. This ligand is very suitable for the coordination of metal ions. Free coordination sites of the metal ions are used to bind different proteins and peptides.

Main application areas for Fractogel® EMD Metal Chelate Affinity Media

- Ideal for separation of recombinant, histidine-tagged proteins
- Separation of peptides
- On-column re-folding

Advantages of Fractogel® EMD Chromatography Media

One of the main advantages of tentacle media is their greater accessibility and minimized steric hindrance between the functional group and the target molecule. Tentacle media provide higher binding capacities compared to conventional methods, especially for large proteins, antibodies, viruses, and plasmids. Target biomolecules are more tightly bound, but during the elution phase the reversible interaction can be neutralized.

Better production yields

A result of the unique surface modification technique is the high binding capacity of all Fractogel® EMD media. Due to the tighter binding of the target molecule, very often the capture step using Fractogel® ion exchange resins is more efficient than other resins. This more efficient capture results in greater overall yield than with other types of chromatography media.

Safer product

In contrast to carbohydrate based media, Fractogel® EMD media are resistant to microbial degradation. Thus, the risk of contamination with endotoxins is greatly reduced. In addition, the ability to clean Fractogel® EMD media multiple times extends its lifetime. This is an important feature especially when recombinant proteins, produced from micro-organisms, are purified.

Lower operating costs

Due to the chemical resistance of Fractogel® EMD media, a high number of cycles can be achieved. Resin lifetime is extremely long and replacement frequency is minimized, resulting in lower operating costs.

Benefits

- Reliable purification of macromolecules
- Efficient capture of target protein, and removal of viruses, DNA and endotoxins
- Excellent yield and high throughput
- Superior stability and quality
- Allowing multiple cycles of column regeneration and sanitization
- Tangible time and cost savings

Fractogel® EMD Media Ordering Information

Description	Quantity [ml]	Particle Size [µm]	Capacity [per ml gel]	Catalogue No.
Fractogel® EMD IEX media				
Fractogel® EMD strong anion exchanger				
Fractogel® EMD TMAE (M)	10, 100, 500, 5000	40-90	100 mg BSA	1.16881
Fractogel® EMD TMAE Hicap (M)	10, 100, 500, 5000	40-90	180 mg BSA	1.10316
Fractogel® EMD TMAE Medcap (M)	10, 100, 500, 5000	40-90	150 mg BSA	1.16885
Fractogel® EMD TMAE (S)	10, 100, 500, 5000	20-40	100 mg BSA	1.16887
Fractogel® EMD weak anion exchanger				
Fractogel® EMD DEAE (M)	10, 100, 500, 5000	40-90	100 mg BSA	1.16883
Fractogel® EMD DMAE (M)	10, 100, 500, 5000	40-90	100 mg BSA	1.16884
Fractogel® EMD strong cation exchanger				
Fractogel® EMD SO_3^- (M)	10, 100, 500, 5000	40-90	130 mg Lys	1.16882
Fractogel® EMD SE Hicap (M)	10, 100, 500, 5000	40-90	140 mg Lys	1.14894
Fractogel® EMD SO_3^- (S)	10, 100, 500, 5000	20-40	150 mg Lys	1.16890
Fractogel® EMD weak cation exchanger				
Fractogel® EMD COO^- (M)	10, 100, 500, 5000	40-90	100 mg Lys	1.16886
Fractogel® EMD affinity media				
Fractogel® EMD Chelate (M)	10, 100, 250, 500, 5000	40-90	80 µmol Cu	1.10338
Fractogel® EMD SEC media				
Fractogel® EMD BioSEC	150, 250, 5000	20-40	5-1,000 kDa	1.10317

SEC = size exclusion Lys= Lysozyme BSA= bovine serum albumin

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