

Data sheet

Protein A SepFast™ Endure
Protein A SepFast™ HighRes Endure
Protein A SepFast™ Large Bead Endure

Protein A SepFast Endure range is affinity chromatography media for the purification of immunoglobulins, such as isolation and purification of classes, subclasses and fragments of immunoglobulins from biological fluids and from cell culture media. The ligand is specially designed allowing to tolerate higher alkaline concentrations during the cleaning and regeneration step.

The protein A Endure ligand binds to the Fc region of immunoglobulins. The binding is highly specific so high purity can be achieved in a single step.

Protein A SepFast Endure: Suitable for most application from small scale to large bioprocessing scale

Protein A SepFast HighRes Endure: Suitable for processing small quantity of antibodies at reduced time

Protein A SepFast Large Bead Endure: Suitable for processing crude or very viscous feedstocks

The range of Protein A SepFast Endure is developed and supported for production scale chromatography use. Regulatory Support File (RSF) is available to assist process validation and submissions to regulatory authorities.

1. Properties

The protein A Endure ligand is immobilised to highly porous and highly cross-linked agarose base matrix. Agarose has long been used for chromatographic separations due to its excellent hydrophilic and low non-specific-binding nature. The particles have an open pore structure with excellent mass transfer properties to large protein molecules. The medium shows high mechanical rigidity, so it can be operated at moderate to high flow velocities with moderate pressure drops.

BioToolomics offers both loose medium and pre-packed ready-to-use disposable columns.

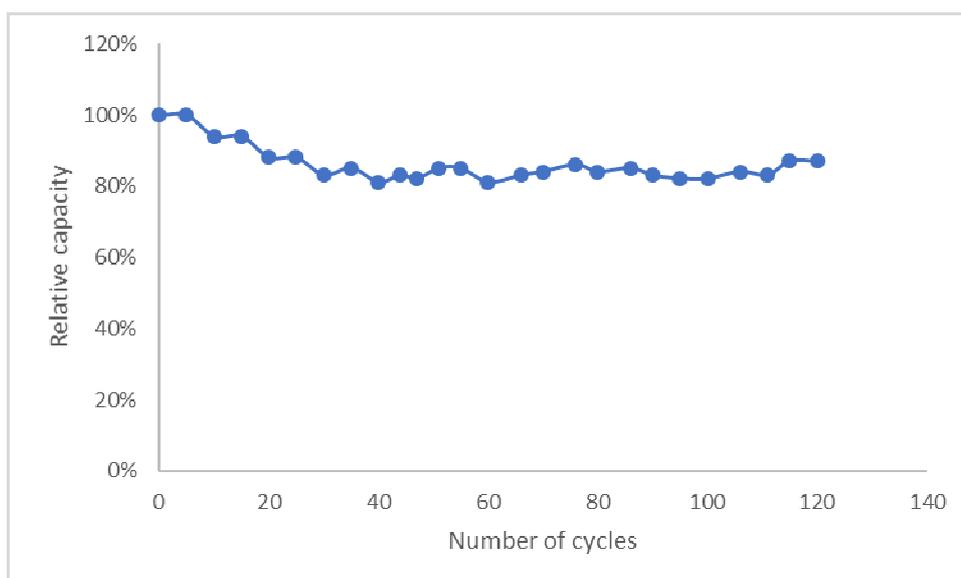


Figure-1: Protein A SepFast Endure alkaline stability test at 0.5 M NaOH: the resin was cleaned with 0.5 M NaOH for 15 mins after each binding / elution cycle with hlgG

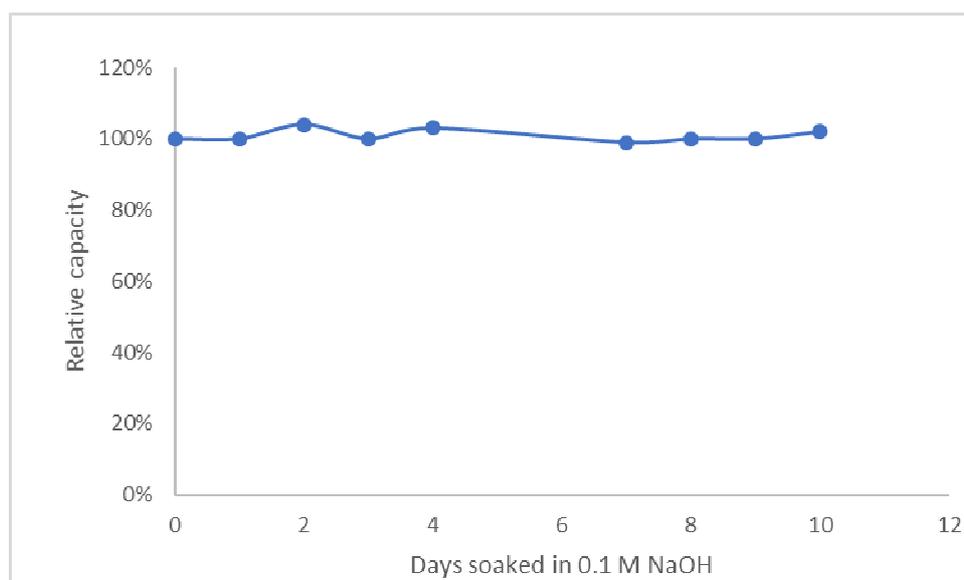


Figure-2: Protein A SepFast Endure alkaline stability test at 0.1 M NaOH: the resin was soaked in 0.1 M NaOH and a sample was taken each day to test its binding capacity to hIgG

Table 1: Characteristics of Protein A SepFast Endure Media and Column:

| | |
|----------------------|--|
| Matrix | Highly cross-linked Agarose |
| Particle size | 50 - 150 μm (Protein A SepFast Endure) 20 - 50 μm (Protein A SepFast HighRes Endure) 150 - 350 μm (Protein A SepFast Large Bead Endure) |
| Binding capacity | >30 mg/ml human IgG/ml |
| Column material | Polypropylene (end-caps, stop plugs), acrylic or polypropylene (column body), polypropylene or polyethylene (frit or meshes), NBR O-rings |
| Operational pressure | Up to 3 bar (42 psi) |
| pH stability | 2-10 (short term) and 3-9 (long term) |
| Working temperature | +4 $^{\circ}\text{C}$ to +30 $^{\circ}\text{C}$ |
| Chemical stability | Compatible with most commonly used reagents for antibody purifications |
| Sanitisation | 0.5 M NaOH for 15 minutes |
| Storage | 20% ethanol at +4 $^{\circ}\text{C}$ - +8 $^{\circ}\text{C}$ |

2. General operations

Protein A SepFast Endure can be used in batch stirred tank, gravity flow or packed bed operations.

The pre-packed resin is stored in 20% ethanol on delivery. It can be directly connected to a suitable chromatography system such as AKTA. Be sure that it is air bubble free. Normally, the end with the product label should be connected as the top inlet. If there is no label difference between those two ends, the column can be connected either way.

The resin or column should be equilibrated with at least 5 – 10 column volumes of the equilibration buffer until the pH and conductivity signals become stable, before a sample is loaded.

The running pressure shall not exceed 3 bars during the operation.

After each application, seal the column ends and store the column properly if re-use is expected.

3. Binding

Protein A SepFast Endure binds IgG from most species at neutral pH (e.g. pH 7 to 7.4) and physiological ionic strength (e.g. phosphate saline buffer). The static binding capacity depends on the source of the particular immunoglobulin. For a column operation, the dynamic binding capacity is determined by a few factors such as flow rate (residence time), sample concentration and binding buffer.

4. Elution

The bound immunoglobulin is normally eluted by reduced pH, such as about pH 3.0. The general elution buffer includes 0.1M glycine pH 3.0 or 0.1M citric acid pH 3.0. For very strongly bound molecules, the pH may reduce to between 2 to 3.

For acid labile proteins, the eluted fractions can be quickly neutralized by adding (or with pre-added) 1M Tris/HCl, pH 9.0 (10% to 20% v/v).

5. Regeneration

After the elution, wash the medium with 2 – 3 volumes of the elution buffer following with 3 – 5 volumes of the equilibration buffer.

6. Cleaning-in-place (CIP)

In some applications, substances such as denatured proteins or lipids stay in the column after the regeneration step. The following cleaning procedure could be carried out.

To remove precipitated or denatured materials, wash the column with 2 column volumes of 6 M guanidine hydrochloride followed immediately with at least 5 column volumes of the binding buffer. To remove the bound hydrophobic components, wash the column with 1 column volume of a non-ionic detergent e.g. 0.1% Triton™ X-100 at 37°C followed immediately with at least 5 column volumes of the binding buffer.

Note: washing with concentrated alcohol is not recommended if the column body is made of acrylic material.

7. Sanitization

Introduce 0.5 M NaOH to the column and keep re-circulating the alkaline solution in the column for 15 minutes. Quickly displace the alkaline solution with the equilibration buffer until the column is equilibrated.

8. Storage

Store the loose medium or the pre-packed column in the presence of 20% ethanol at 4-8°C. Never freeze the medium or the column.

9. Further information

Visit www.biotoolomics.com for further information or contact the technical team or sales representatives.

10. Ordering information

| Product | Quantity | Code no. |
|-------------------------------------|--------------------|--------------|
| Protein A SepFast HighRes Endure | 5 ml | 230901-5ML |
| | 25 ml | 230901-25ML |
| | 100 ml | 230901-100ML |
| | 250 ml | 230901-250ML |
| | 500 ml | 230901-500ML |
| | 1 litre | 230901-1L |
| | 1 ml HiSep column | 230902-1ML |
| | 5 ml HiSep column* | 230902-5ML |
| Protein A SepFast Endure | 5 ml | 230301-5ML |
| | 25 ml | 230301-25ML |
| | 100 ml | 230301-100ML |
| | 250 ml | 230301-250ML |
| | 500ml | 230301-500ML |
| | 1 litre | 230301-1L |
| | 5 litre | 230301-5L |
| | 10 litre | 230301-10L |
| | 1 ml HiSep column | 230302-1ML |
| | 5 ml HiSep column* | 230302-5ML |
| Protein A SepFast Large Bead Endure | 5 ml | 230401-5ML |
| | 25 ml | 230401-25ML |
| | 100 ml | 230401-100ML |
| | 250 ml | 230401-250ML |
| | 500ml | 230401-500ML |
| | 1 litre | 230401-1L |
| | 5 litre | 230401-5L |
| | 10 litre | 230401-10L |



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