Data sheet

Magnetic SepFast™ Supor Q
Magnetic SepFast™ Supor DEAE
Magnetic SepFast™ Supor S
Magnetic SepFast™ Supor CM

Magnetic SepFast Supor Q (DEAE, Sand CM) is designed for the capture of proteins or very large molecules (such as endotoxin, DNA, virus and virus like particles) with much increased binding capacity, under magnetic operations.

The media is particularly suitable for high throughput screening or purification of phage libraries or viruses.

1. Properties

The media is supplied as 50% slurry. The base matrix possesses a combination of small pore (50-100nm) and large pore (micro level). It shows fast accessibility to both small and large molecules.

The base matrix is made of a composite of polysaccharides that have been highly cross-linked. The media is stable to most of the chemical conditions experienced in the bioprocessing industry.

Table 1: Characteristics of Magnetic SepFast Supor Q and S:

Matrix	Highly cross-linked polysaccharide composites encapsulating magnetic material
Functional group	Magnetic SepFast Supor Q: Strong anion, $-N^{+}(CH_3)_3$ Magnetic SepFast Supor DEAE: Weak anion diethylaminoethyl, $-C_2H_4N(C_2H_5)_2$ Magnetic SepFast Supor S: Strong cation sulfo, $-SO_3^{2-}$ Magnetic SepFast Supor CM: Weak cation carboxyl, $-COO^{-}$
Ionic capacity	0.07 – 0.16 mmol/ml
Particle size	20 - 50 μm
pH stability	3 -14 (short term) and 3 -12 (long term)
Working temperature	$+4^{O}C$ to $+30^{O}C$
Chemical stability	All commonly used buffers
Avoid	Oxidizing agents, ionic detergents

2. Operations

The magnetic media is stored in 20% ethanol (+ 0.2 M sodium acetate for Supor S) at a slurry of 50% (v/v) on delivery.

The media needs be equilibrated with at least 5 – 10 volume of the equilibration buffer and until the pH and conductivity signals become stable, before a sample is loaded.

3. Method optimization

We recommend scouting for optimal binding pH and for optimal ionic strength. Due to the fast pore accessibility, the binding step could be done within a few minutes. We recommend to pay special attention to optimising elution conditions to achieve high recovery.

In general, balancing product recovery against process throughput is the major consideration when optimizing a method. However, for the purification of shearing-force sensitive molecules, harsh mixing should be avoided.

4. Process scaling up

BioToolomics supports process scaling-up. Please contact us for further information.

5. Maintenance

Depending on the individual applications, the magnetic medium may be single used or re-used. For the re-use purpose, please see the following instructions.

Regeneration
After each run, elute any reversibly bound material either with a high ionic strength solution (e.g. 1M NaCl in buffer) or by increased pH.

Cleaning-in-place (CIP)
CIP is a procedure that remove strongly bound materials such as lipids, endotoxins and denatured proteins that remain in the medium after regeneration.

A specific CIP protocol should be developed for each process according to the type of contaminants present. The frequency of CIP depends on the nature of individual applications.

The following information works as a general guidance.

Salt with concentration up to 2 M can be used to clean the impurities bound by ionic interactions. The contaminants bound by hydrophobic nature can be removed by the following reagents: 1 M NaOH, low percentage non-ionic detergents (e.g. 0.1 – 2%), 30% isopropanol in basic or acidic conditions (e.g. in the presence of acetic acid or phosphoric acid). A combination of the above reagents can be explored as well. In general, the incubation time should be longer (e.g. from 30 minutes to 2 hours) to ensure full dissociation of the contaminants.

Sanitization
Sanitization using 0.5-1.0 M NaOH with a contact time of 1 hour is recommended.

6. Storage

The reused medium should be equilibrated in binding buffer containing 20% ethanol to prevent microbial growth. Store the medium at a temperature of +4^{o}C to +30^{o}C. After storage, equilibrate the medium with at least 5 volume of running buffer before use.

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