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Boric Acid Beads 4FF

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1. Product Description

Boric Acid Beads 4FF is an affinity chromatography medium designed for easy purification of the molecule containing the 1,2 cis-diol structure . Therefore, **Boric Acid Beads 4FF** can be used to bind sugars, nucleosides, nucleotides, nucleic acids and enzymes, etc. It is particularly suitable for the isolation and purification of glycoproteins. **Boric Acid Beads 4FF** is stable and widely used to achieve purification of target proteins at relatively high flow rates. The specific performance is shown in Table 1.

Table 1. Characteristics of **Boric Acid Beads 4FF**

Item	Description
Matrix spherical	High cross-linked 4% agarose beads
Ligand	Aminophenyl boronic acid
Ligand density	>7 mg Glycoproteins /ml medium
Particle size (μm)	45-165
Maximum flow rate	300 cm/h
pH stability	3-10
Storage solution	1×PBS containing 20% ethanol
Storage	2-8℃

2. Purification Procedure

2.1 Buffer Preparation

Water and chemicals used for buffer preparation should be high purity. It is recommended filtering the buffers by passing them through a 0.22μm or 0.45 μm filter before use.

Suggested Buffer for binding nucleosides:

Binding/Wash buffer: 50 mM Phosphate buffer, 1.0 M NaCl, pH 7.8

Elution buffer: 50 mM Phosphate buffer, 1.0 M NaCl, 100 mM sorbitol, pH 7.8

Suggested Buffer for binding glycoproteins:

Binding/Wash buffer: 50 mM taurine/NaOH, 20 mM $MgCl_2$, pH 8.7

Elution buffer: 50 mM taurine/NaOH, 20 mM $MgCl_2$, 100 mM sorbitol, pH 8.7 or 50mM Tris-HCl, pH 8.7

2.2 Sample Preparation

It is recommended filtering the sample solution by passing them through a 0.22 μm or 0.45 μm filter before use.

Note: Tris or triethanolamine are not available in the buffer or sample.

2.3 Packing Columns

Boric Acid Beads 4FF is easy to pack and use, and its high flow properties make it excellent for industrial scaling-up. The method of packing the column is described below.

1) Remove air from the column dead spaces by flushing the end-piece and adapter with packing buffer. Make sure no air has been trapped under the column net.

2) Close the column outlet leaving the net covered with packing buffer.

3) Resuspend the beads stored in its container by shaking (avoid stirring the sedimented medium). Pouring the slurry down a glass rod held against the column wall will minimize the introduction of air bubbles.

If using a packing reservoir, immediately fill the remainder of the column and reservoir with packing buffer. Mount the adapter or lid of the packing reservoir and connect the column to a pump. Avoid trapping air bubbles under the adapter or in the inlet tubing.

4) Open the bottom outlet of the column and set the pump to run at the desired flow velocity. Ideally, **Boric Acid Beads 4FF** is packed at a constant pressure of approximately 3 bar (0.3 MPa). If the packing equipment does not include a pressure gauge, use a packing flow velocity of approximately 400 cm/h (10 cm bed height, 25°C, low viscosity buffer).If the recommended pressure or flow velocity can not be obtained, use the maximum flow velocity the pump can deliver. This should also give a reasonable well-packed bed. Do not exceed 75% of the packing flow velocity in subsequent chromatographic procedures.
5) When the bed has stabilized, close the bottom outlet and stop the pump.
If using a packing reservoir, disconnect the reservoir and fit the adapter to the column. If using the column, carefully place the top filter on top of the bed before fitting the adapter.
6) With the adapter inlet disconnected, push the adapter down, approximately 2 mm into the bed, allowing the packing solution to flush the adapter inlet.
7) Connect the pump, open the bottom outlet and continue packing. The bed will be further compressed at this point and a space will be formed between the bed surface and the adapter.
8) Close the bottom outlet. Disconnect the column inlet and lower the adapter approximately 2 mm into the bed. Connect the pump. The column is now ready to use.

2.4 Sample Purification

1) Fill the syringe or pump tubing with binding buffer. Remove the stopper and connect the column to the syringe (with the provided connector), or pump tubing, “drop to drop” to avoid introducing air into the column. Remove the snap-off end at the column outlet.
2) Wash the column with 10 column volumes of binding buffer .
3) Apply the sample, using a syringe fitted to the connector or by pumping it onto the column.
4) Wash with 5 to 10 column volumes of binding buffer or until no material appears in the effluent.
5) Elute with 5 column volumes of elution buffer. Other volumes may be required if the interaction is difficult to break.

2.5 Analysis

Identify the fractions containing the target protein. Use UV absorbance, SDS-PAGE, or western blot.

3. Regeneration and Cleaning-In-Place

3.1 Regeneration

Wash the column with 3 column volumes 0.1 M Tris-HCl，0.5 M NaCl, pH 8.5 and 0.1 M NaAc, 0.5 M NaCl, pH 4.5, repeat the step for 3 times, followed by washing the column with 5 column volumes of Binding Buffer.
After fibrinogen purification, column can be cleaned with 5 column volumes Binding Buffer containing 0.2 M amino-hexanic acid and 1 M NaCl. After the nucleic acid purification, 5 column volumes Binding Buffer containing 2 M NaCl can be used.

3.2 Cleaning-in-Place

Wash the column with 0.1% Triton X-100 at 37℃ to remove the strong denatured substance, lipoproteins and lipids. And then washing the column with 5 column volumes of Binding Buffer.

4. Related Products

Product	Cat. No.	Size
Boric Acid Beads 4FF	SA057005	5 ml
	SA057025	25 ml
	SA057100	100 ml
	SA057500	500 ml
	SA05701L	1 L
	SA05710L	10 L