



SmartCore 700

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1. Product Description

SmartCore 700 is aimed at intermediate purification and polishing of viruses and other large biomolecules in flowthrough mode. Each Bead has a ligand-activated core and an outer layer without ligands. The layer prevents the large targets from enter into the beads whereas smaller proteins and impurities enter into the core where they bind to the hydrophobic and positively charged octylamine ligand. The molecular size cut-off for proteins is approximately $M_r = 690000$. See table 1.

Table 1. Characteristics of **SmartCore 700**

Item	Description
Matrix Spherical	Polymeric microsphere
Ligand	octylamine
Static binding capacity/ml medium	15-20mg BSA/ml medium
Ionic capacity (mmol/ml)	0.15-0.30
Particle size	90 um
Maximum Pressure	1.5MPa
pH	1-14
Chemical stability	All commonly used aqueous buffers, 1M sodium hydroxide, 6M guanidine hydrochloride, 30%isopropanol and 70%ethanol
Storage Solution	20% ethanol
Storage Temperature	4-30 °C

2. Purification Procedure

2.1 Buffer Preparation

SmartCore 700 is compatible with most of the commonly used buffer for gel filtration and ion exchange chromatography, such as phosphate or Tris buffer. It is advised to use a pH of 7 to 9 to ensure good binding of the host cell proteins to the ligands.

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

2.2 Sample Preparation

To insure that proper ionic strength and pH are maintained for optimal binding, the sample may be dialyzed overnight against Binding Buffer.

High levels of DNA and RNA can in some cases impair the performance of SmartCore 700. Samples can be treated with benzonase endonuclease to reduce DNA/RNA levels prior to the SmartCore 700 purification step.

2.3 Packing Columns

SmartCore 700 is easy to pack and use, and its high flow properties make it excellent for industrial scaling-up. Here we describe the packing procedure of **SmartCore 700** to medium pressure chromatography columns.

- 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, **SmartCore 700** is packed at a constant pressure of approximately 3bar (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) Maintain packing flow velocity for at least 3 bed volumes. When the bed has stabilized, mark the bed height on the column and 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 into the column until it reaches the mark, allowing the packing solution to flush the adapter inlet. Lock the adapter in position.
- 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 distilled water. 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 3-5 column volumes of distilled water.
- 3) Equilibrate the column with at least 5 column volumes Binding Buffer.
- 4) Apply the pre-treated sample, using a Loop fitted to the connector or by pumping it onto the column.
- 5) Wash with Binding Buffer until the absorbance reaches the baseline or no material appears in the effluent(Generally at least 10-15 column volumes).

3. Cleaning-in-Place

CIP should be performed after each purification to ensure consistency of results.Regular CIP prevents the build-up of contaminants in the packed bed and helps to maintain capacity,flow properties and general performance of the medim.

CIP of **SmartCore 700** uses a combination of solvent and sodium hydroxide:

Wash the column with a solution of 1M NaOH in 30% isopropanol.Ensure that the column and the Buffer are combined for 30-60min.It can be left standing for 15-30min for more effective cleaning.

4. Related Products

Product	Cat. No.	Size
SmartCore 700	SEC0220	25ml
	SEC0221	100ml
	SEC0222	500ml
	SEC0223	1L
	SEC0224	10L
PreCap SmartCore 700	SEC022C11	1x1ml
	SEC022C51	5x1ml
	SEC022C15	1x5ml
	SEC011C55	5x5ml

