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SHIMADZU

For Shimadzu HPLC

Shim-pack ISA-09

Instruction Manual

■ Introduction

This product is a Shim-pack ISA-09 which is an reduced sugar analysis column by anion exchange chromatography. Please read the following instructions before use.

■ Specifications

The product specifications are as follows.

Item	Shim-pack ISA-09	Shim-pack ISA-09(G)
Base material	Styrene divinyl benzene copolymer	
Ion exchange group	quaternary ammonium group	
Particle size	Approx. 9 µm	
Use condition	Boric Complex-Anion Exchange Mode of Reducing Sugar Analysis System	
Maximum operating pressure	8 MPa	

■ Operating Precautions

Please check if anything is missing or damaged before use. If there are any signs of damage, notify your local Shimadzu representative at once.
The Shim-pack ISA-09 columns are shipped with the solvent used for the final QC test of the column, as detailed in the column performance report delivered with the column (Guard column is excluded). The performance report includes the column serial number, column performance, etc. Please keep it.
At the time of shipment, the product meets the test specification described in the certificate, but this specification does not guarantee retention time or peak shape for all compounds applicable to this column.
Do not drop or hit the column. Strong shocks can cause the column to deterioration.
To maximize column life, use the columns within the usage condition shown in the "■ Specifications".

■ Precautions when using a new column

When using the product for the first time after purchase, it is necessary to flow the solution through the guard column and the analytical column in advance under the following conditions, to equilibrate the column with boric acid ions. Omitting this step may result in poor separation and retention time reproducibility.

Equivalent solution:	0.4 mol/L Boric acid (potassium) buffer solution (pH 9)
Flow rate:	0.6 mL/min
Column temperature:	65 ℃
Time required:	About 20 hours

■ Column Installation

The flow direction of the column is shown on the column (→). When installing the column, ensure that the flow direction matches the mobile phase flow direction.
The presence of voids in the tubing connect part may cause leakage and deterioration of column performance (theoretical plate, peak symmetry). Pay attention to the ferrule tip length or cut surface of the tubing to avoid voids.

■ Mobile phase

For the mobile phase, use boric acid buffer solution described in the instruction manual of the reducing sugar analysis system. Avoid using organic solvents.

- Use a reagent with a special grade or equivalent grade or higher. Use water with HPLC grade or higher. If the metal ion concentration in the reagent is high, separation performance may be degraded. If impurities in the reagent affect the analysis, it may be possible to improve by changing the reagent.

■ Sample

When preparing the sample to be injected into this column, pay attention to the following.

- The sample that can be injected into this column is an aqueous solution with pH 3-10. It may contain an water soluble organic solvent, as long as the concentration is 10% or less. If it exceeds these ranges, dilute with water or mobile phase solution.
- If the sample contains highly hydrophobic compounds or compounds that precipitate or gel in the mobile phase, remove the compounds by pretreatment such as solid phase extraction or liquid phase extraction.
- If the sample contains an ionic polymer such as protein, remove it similarly by extraction or ultrafiltration.
- Filter the sample with a membrane filter (0.2 to 0.45 µm).

Note Contamination from the sample may accumulate, and may show a increase in column pressure, changes in retention time of the target compound, or deterioration of peak shape. Be sure to connect a guard column when using it and replace it periodically.

■ Flushing the column

If the peak shape or separation becomes worse, it may be recovered by cleaning under the following conditions.

Rinse solution:	0.4 mol/L Boric acid (potassium) buffer solution (pH 9)
Flow rate:	0.2 mL/min
Column temperature:	65 ℃
Time required:	About 12 hours

Note The flushing effect may not be sufficient depending on the cause and condition of the column.

■ Column storage

When the column will not be used for a while, flow 10 - 20 mL of 0.4 mol/L boric acid (potassium) buffer solution (pH 9). After replacing the solution in the column, remove the column from the LC system, plug both ends with a stop plug, and store in a room with minimize temperature fluctuation. Do not store in places where temperatures may rise or where there is a risk of freezing. When storing for more than one month, replace the filling solution periodically.

■ Disposal Precautions

When disposing of the column, do so in accordance with the processing standards determined by law, separately from general industrial waste and household garbage.

■ Technical Support

Should you find any defect in performance, please contact your local Shimadzu representative to ensure your complete satisfaction.
We cannot accept any claim when performance has deteriorated due to noncompliance with the operation procedures elucidated above, or as a result of normal aging.