

EliteUQ Bio-Beads S-X3 Chromatography Column

Instruction Manual

V1.0.2

Thank you very much for choosing the EliteUQ series special columns from ELITEHPLC. Please read this instruction manual carefully before use.

1. Scope of application

The EliteUQ Bio-Beads S-X3 chromatographic column is a chromatographic column developed based on the determination of residues of 22 organochlorine pesticides in the China Pharmacopoeia, fully meeting the requirements of the Method for Determination of Pesticide Residues 2341 in Part IV of the China Pharmacopoeia for the determination of residues of 22 organochlorine pesticides. This chromatographic column is also suitable for the determination of phthalic acid, antioxidants, and semi-volatile organic compounds, as well as for the separation of small molecular weight organic polymers and other hydrophobic substances, and for the determination of Sudan Red No.1, No.2, No.3, and No.4 residues in food.

Bio-Beads S-X3 Column Parameters

Particle Size (μm)	Column Volume (mL/g) (benzene)	Separation Range
40-75	4.75	<2000

2. Column connection

Column inlets and outlets are connected in the direction indicated by the column label arrows.

The port part of the column connection tube must be flat, without burrs and incision bevels.

If possible, the connecting pipes at both ends of the chromatographic column should be as short as possible, and the inner diameter of the connecting pipe should be as small as possible to prevent the sample diffusion from not reflecting the true column efficiency of the chromatographic column.

3. Temperature range

Recommended for use at room temperature, with temperature not exceeding 50°C. Avoid sudden temperature increases during use.

4. Column storage

When the chromatographic column is not in use, it is recommended to store it with the mobile phase. Prior to storage, the column must be thoroughly rinsed to remove residual sample impurities. To prevent column bed drying, secure both ends of the column with plugs. For long-term storage, regular rinsing with the mobile phase is advised. The storage temperature should ideally be maintained around 25°C.

5. Column regeneration

After a certain period of use, chromatographic columns may experience performance degradation due to contamination or other factors, rendering them unusable. In such cases, regeneration using dichloromethane, toluene, or tetrahydrofuran is recommended. Each mobile phase should flow through the column for at least 10-20 column volumes. Users may also select appropriate solvents capable of dissolving column contaminants for forward or reverse flushing based on practical experience and objectives. However, column

efficiency or other parameters of regenerated or backflushed columns are unlikely to recover to the levels of new columns.

6. Maintenance of Chromatographic Column Usage

Liquid chromatography columns are consumables, and proper operation and maintenance are crucial for extending their lifespan.

(1) Precautions before using the chromatographic column

Unless otherwise specified, the storage solution for the chromatographic column should be the mobile phase indicated in the evaluation report. However, the storage solution may be lost during transportation, so it is recommended to activate the column before use. Using the mobile phase specified in the evaluation report and a flow rate of 2 mL/min, flush the column 3-5 times with column volume, then adjust to the required experimental flow rate for equilibration.

(2) Mobile phase

The organic solvent used in the mobile phase is recommended to be chromatographic grade. If a solvent of this grade is not used, it must be filtered with a solvent filter (0.45 μm filter membrane) prior to use.

The mobile phase should preferably be consistent with the chromatographic column storage solution. Do not arbitrarily alter the composition or proportion of the mobile phase, and prepare it immediately before use. If other solvents are employed as the mobile phase, ensure compatibility between the solvent and the chromatographic column storage solution. Avoid using highly polar reagents as the mobile phase, such as methanol or water. The mobile phase must not contain chromic acid, nitric acid, hydrogen peroxide, or similar substances.

(3) Samples

Impurities in samples are one of the primary causes of column contamination and reduced column efficiency in chromatography. For complex samples, appropriate pretreatment methods should be employed to remove impurities, and filtration using 0.22μm or 0.45μm filter membranes is mandatory prior to injection. In some cases, incompatibility between sample solvents and mobile phases (e.g., immiscibility or polarity differences) may lead to poor chromatographic peak resolution or the appearance of ghost peaks. It is recommended to dissolve samples using the mobile phase whenever possible.

(4) Flow rate and pressure

The S-X3 packing material is a PS-DVB polymer matrix packing material and cannot withstand excessively high pressure. The operating pressure of this chromatographic column is typically below 10 MPa. Ensure that the column operates under a pressure below 10 MPa and maintains a flow rate not exceeding 5 mL/min.

7. Common Issues and Solutions During Use

Common issues encountered during the operation of high-performance liquid chromatography (HPLC) columns include reduced column efficiency and sudden increases in column pressure. Potential causes may include the following:

- (1) Contamination of the filter screen plate in the column head of the chromatographic column;
- (2) Column head filler contamination in chromatographic columns;

The solution is as follows:

When contamination of the capillary screen or packing material is detected, a mobile phase capable of dissolving contaminants can be used to flush the

chromatographic column in the opposite direction to that of column usage (with a volume exceeding 10 column volumes or as determined by specific conditions; it is advisable to disconnect the detector during this process) to remove contaminants from the column. Subsequently, the column should be operated in the direction indicated by the arrow on the chromatographic column (flow direction).

When the aforementioned methods fail to resolve the issue, it is recommended to replace the chromatographic column with a new one.

Order Information for EliteUQ Bio-Beads S-X3 Chromatography Column:

Specification (mm)	Order Number
20×300	31111352
25×400	31111354

Other specification chromatographic columns can be customized.

Scan the QR code for more product information.



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