Amber Sugar chromatography column Instruction Manual

V1.0.2

1. Scope of application

The Amber Sugar column is specifically designed for the efficient separation of carbohydrates (monosaccharides, disaccharides, oligosaccharides and their derivatives), alcohols, and organic acids. The packing material of this column is Amber Sugar H8* obtained by surface-modifying sulfonic acid groups (-SO3H) on (polymer) low-crosslinking degree polystyrene/divinylbenzene (PS/DVB). Based on this, further chelation of Ca2+, Pb2+, K+, and Na+ ions results in a series of chromatographic columns (Amber Sugar X8, where X = Ca, Pb, K, Na).

Note: 8-indicates a crosslinking degree of 8%. For chromatographic columns with 5% or 10% crosslinking degree requirements, please contact us by phone.*

2. Connection and Operation of Column

The inlet and outlet of the chromatographic column were connected in the direction indicated by the arrow on the column label.

The port section of the chromatographic column connecting tube must be smooth, with no burrs or beveled cuts.

Since Amber Sugar chromatography columns are typically used at higher temperatures, it is recommended to employ metal tubing with a diameter of at least 50 cm before the column to ensure adequate preheating of the mobile phase prior to column entry. After connecting the tubing, initially run the system at a flow rate of 0.1 mL/min until the column temperature reaches the set point, then gradually increase the flow rate to the specified value. Upon completion of the experiment, maintain the flow rate at 0.1 mL/min until the column temperature decreases to 40°C before removing the chromatography column.

3. Operating Conditions

Column name	Temperature range	Recommended column temperature	pH range
Amber Sugar H	35~85℃	55℃	1~3
Amber Sugar C8	50~85℃	85℃	5~9
Amber Sugar Pb	50~85℃	75℃	5~9
Amber Sugar K	50~85℃	85℃	5~9
Amber Sugar Na	50~85℃	85℃	5~9

Note: In routine analysis, the Amber Sugar chromatographic column is recommended to operate at a flow rate of 0.4–0.8 mL/min. During experiments, exceeding or falling below the specified range for column temperature and mobile phase pH may cause irreversible damage to the chromatographic column.

The maximum pressure resistance of chromatographic columns with 5% and 8% crosslinking degree is 1000 psi; that of columns with 10% crosslinking degree is 1200 psi.

4. Chromatographic column storage

Long-term storage: Amber Sugar H8 is stored in 2.5-5.0 mM sulfuric acid solution, while Amber Sugar Ca8, Amber Sugar Pb8, Amber Sugar K8, and Amber Sugar Na8 are stored in ultrapure water.

The optimal storage temperature is room temperature.

5. Column Maintenance

Chromatographic columns are consumables, and standardized operation and maintenance are crucial for ensuring normal usage and extending the lifespan of chromatographic columns.

(1) Precautions before using the chromatographic column

During storage and transportation, column packing material may become desiccated. In such cases, it is recommended to flush and activate the chromatographic column with a preservation solvent equivalent to 10-20 times the column volume. Prior to use, users must ensure that the column storage solution is miscible with the actual mobile phase used for sample analysis, and that the sample dissolution solvent is compatible with the mobile phase.

(2) Mobile phase

The organic solvent used in the mobile phase must be chromatographically pure. For the mobile phase water, ultrapure water or double-distilled water from glassware is preferred. Buffer salts must be filtered through a solvent filter (0.45 μm membrane) prior to use. The mobile phase should be prepared immediately before use, as prolonged storage of saline solutions may lead to bacterial growth or precipitation.

(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, followed by filtration using 0.22μm or 0.45μm filter membranes prior to injection. If sample processing is impractical, protective columns must be utilized. In some cases, incompatibility between sample solvents and mobile phases (e.g., immiscibility or polarity differences) may lead to distorted chromatographic peaks or ghost peaks. It is recommended to dissolve samples using mobile phases whenever possible.

6. Potential issues during use and solutions

Under certain special circumstances, poor separation efficiency of sugar alcohols during chromatographic column separation may occur, with strong retention of sugar alcohols on the stationary phase.

The solution is as follows:

The addition of organic solvent acetonitrile to the mobile phase can significantly improve the separation efficiency of sugar alcohols. On the other hand, the incorporated acetonitrile serves as a modifier to reduce the retention of sugar alcohols on the stationary phase.

The content of organic modifiers added to the mobile phase should not exceed 30%. Ethanol and isopropanol can be used as alternatives to acetonitrile, while methanol, tetrahydrofuran, dimethylformamide, and other non-polar organic solvents are not recommended.

7. Quality assurance

(1) Factory inspection report

Each chromatographic column undergoes rigorous quality inspection prior to shipment, with corresponding evaluation reports issued. The solvent stored in the shipped chromatographic columns is 2.5-5.0 mM sulfuric acid or ultrapure water.

(2) Guarantee

Upon receiving the chromatographic column, immediately inspect the outer wall of the column tube and evaluate its column efficiency. If the guaranteed data cannot be obtained, contact your agent or us directly within two weeks. Note that the lifespan of the chromatographic column is influenced by various factors including operating conditions, sample types, usage frequency,

operator experience, and operational environment, with no definitive warranty provided.

8. Column selection for chromatography

Column name	fineness	degree of cross linking	specifications	application area
Amber Sugar H	5μm 10μm	5% 8% 10%	7.8mm×300mm	Fermentation products, organic acid fruit juice, alcohols, sugars
Amber Sugar Ca				Particularly suitable for the separation of monosaccharides, disaccharides, trisaccharides, tetrasaccharides, and sugar alcohols.
Amber Sugar Pb				Pentose and hexose in wood products Dairy products containing sucrose, lactose, etc.
Amber Sugar K				Sucrose, honey, corn syrup, beet sugar, and other sugar-containing plant products
Amber Sugar Na				Oligosaccharides (particularly those containing high concentrations of inorganic sodium ions), such as honey

Scan the QR code for more product information.

Suzhou Elite Science & Technology Co., Ltd.

Address: 701#, Building 10, Liando U Valley, No. 179 Zhujiawan Street, Gusu District, Suzhou, Jiangsu, China.

Tel: +86-512-67997535

Fax: +86-512-67997535

Elite (Dalian) Analytical Instruments Co., Ltd.

Address: No. 2-2 Xuezi Street, Qixianling Subdistrict, Dalian High-Tech Industrial Zone, Liaoning, China.

Tel: +86-0411-84753333

Fax: +86-0411-84753333

Customer service email : info@eliteHPLC.com

http://www.eliteHPLC.com