



ASTRA® Sugar Na(S) column Manual

Overview

ASTRA® Sugar Na(S) columns have been developed for fast separation of carbohydrates, oligosaccharides and sugar alcohols. The ASTRA® Sugar Na(S) columns are delivered in dimensions of 300 × 8 mm (ID) and they are packed with carefully selected ion-exchange polymer, cross-linked sulfonated styrene-divinyl benzene (SDVB) with sodium ionic form. To obtain the best performance, certain procedures regarding installation, operation, handling and storage should be followed carefully as explained in this Manual.

ASTRA® Sugar Na(S) technical specification

Product line	Astra Sugar Series
Particle type	Phenyl-resin-SO ₃
Ionic form	Na ⁺
Crosslinking	Proprietary
Particle size	10 µm
Max. Flow rate	1.5 mL/min
Optimum Flow rate	0.5 – 1.0 mL/min
Max. pressure	60 bar
Max. temperature	90 °C
Optimum temperature	60 to 85 °C
pH range	7 to 12
Storage solvent	UPW / 0.05% NaN ₃
Storage temperature	4 °C
Mobile phase	UPW
USP Code	L58

UPW = Ultra-Pure-Water

ASTRA® Sugar Na(S) use and storage

Attention

Please ensure that you change the ion free water regularly to prevent bacterial growth. Changing of the column temperature should be done very slowly, e.g. 10 °C in 20 minutes. Do not exceed the maximum allowable pressure.

Start the column use

Set the flow rate at 0.05 mL/min. Keep heating the column slowly, until it reaches required temperature. After that temperature is attained and satisfactory baseline is achieved, gradually set the flow rate at the prescribed level.

Recommended storage

If column is not used for 1-3 days: Keep temperature of the column as it was and reduce the flow rate to 0.05 mL/min for standby mode. Do not cool the column.

If column is not used for 4 days and more: Reduce the flow rate to 0.05 mL/min. Switch of column oven and let system cool down to about 20°C while pumping eluent. Switch off eluent pump, remove the column and use delivered plastic plugs (plastic plugs have to be “long enough” to fit stably into the thread). Put the column into a refrigerator (cold dark place at 4 °C, do not freeze). After 1–4 hours, check the plastic plugs for tightness and make sure no water can evaporate from column. Store the column for the time you need in the refrigerator.

You can use 0.05% NaN_3 dissolved in water to rinse the column (to prevent bacterial contamination) if storage is planned for more than two weeks.

Recommended cleaning procedure

Run the column at standby mode (0.05 mL/min, UPW, 80 °C) within several hours to reach a satisfactory baseline.

Regeneration

Regeneration can be done by using

- 0.05M NaNO_3 solution in water
- With flow rate 0.15 mL/min and temperature 80 °C for approx. 6 hours
- Followed by rinsing with 0.3 mL/min with UPW for a further 6–8 h

The success of the regeneration is checked by comparing with the initial selectivity.

Retention times for some saccharides, sugar alcohols and alcohols

Flow rate	1.0 mL/min	Flow rate	0.5 mL/min
Ethanol	10.295	Ethanol	20.572
Fructose	7.369	Fructose	14.723
Galactose	7.225	Galactose	14.428
Glucose	6.857	Glucose	13.675
Glycerol	8.182	Glycerol	16.339
Lactose	5.763	Lactose	11.505
Maltitol	5.806	Maltitol	11.609
Maltose	5.738	Maltose	11.458
Mannitol	6.883	Mannitol	13.747
Mannose	7.304	Mannose	14.579
Melezitose	5.130	Melezitose	10.234
Sorbitol	7.153	Sorbitol	14.276
Sucrose	5.670	Sucrose	11.317
Xylitol	7.585	Xylitol	15.151
Xylose	7.397	Xylose	14.766

Conditions

Dimensions	300 × 8.0 mm
Mobile phase	UPW
Optimum flow rate	1.0 mL/min or 0.5 mL/min
Temperature	80 °C
Detection	RID @ 55 °C