Version:[03]2024.07.24

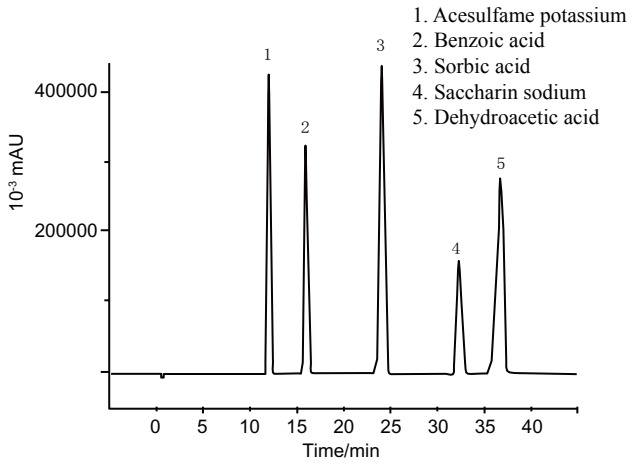
Blossmate® PSV C18 Care and Use Manual

Overview

Blossmate® PSV C18 column from Welch Materials is a high-end, new liquid chromatography column characterized by high column efficiency and tolerance to high proportions of aqueous phases.This column uses ultra-high purity spherical chromatography silica gel as the matrix, with high-density alkyl functional groups bonded to it. The Blossmate® PSV C18 packing material offers high selectivity and strong retention for hydrophilic and polar compounds, which are often difficult to retain and separate on conventional C18 columns. The Blossmate® PSV C18 utilizes complete end-capping technology, significantly enhancing the stability of the packing material. It demonstrates a stable baseline and high sensitivity even under neutral pH conditions, making it particularly suitable for high efficiency separations in techniques such as LC-MS.The Blossmate® PSV C18 column is widely used for the separation and analysis of active components such as oligosaccharides, amino acids, peptides, nucleotides, and organic acids.

Chromaotgraphic condition and chromatogram

Concentration of five kinds of preservatives and sweeteners is 200 μg/mL in the test of acesulfame potassium, benzoic acid, sorbic acid, saccharin sodium, dehydroacetic acid.



Column: Blossmate® PSV C18 4.6×250mm, 5μm

Mobile phase: Methanol -20 mM Ammonium Acetate Solution (adjust pH to 6.70 with Acetic Acid) = 7:93

Temperature: 30℃

Flow rate: 1.0mL/min

Wavelength: 230nm

Injection volume: 5μL

Concentration of sample: Concentration of five kinds of preservatives and sweeteners is 200μg/mL

No	RT	Plates	Tailing Factor	Resolution
1	8.503	17919	1.344	-
2	10.469	13606	1.382	6.413
3	14.481	16258	1.202	9.867
4	18.565	18113	1.544	8.120
5	20.931	12433	0.699	3.632

Precautions

Blossmate® PSV C18 columns typically operate under high pressure. If the tubing connections are not tight, it can lead to leaks of organic solvents and injected samples, posing health risks to the operator. In the event of a leak, wear appropriate gloves to handle it. Additionally, take protective measures when opening the column to prevent inhalation of fine silica particles.

Installation and operation

During transportation or when not in use, the ends of the column are sealed with plugs. When connecting the column to the chromatography system, first remove the plugs. Ensure that the flow direction of the mobile phase matches the direction indicated on the column. Unless there are special considerations, such as backflushing to remove contaminants at the inlet, always connect the column according to the marked direction. Improper sealing or installation, or mismatched fittings, can lead to leaks. Follow these steps to connect the column and fittings to the HPLC system:

(a) For first-time use, slide the tubing fitting and ferrule onto the 1/16” tubing. The wide end of the ferrule should face the fitting.
(b) Insert the tubing firmly into the column port, slide the ferrule and fitting forward, and engage the fitting threads with the column port threads. Tighten the fitting. For polymer tubing, proceed to step (d); for metal tubing, continue to (c).
(c) After pressing the tubing into the column port, use a 1/4” wrench to further tighten the nut.
(d) Repeat the process for the other end of the column.
New Blossmate® PSV C18 columns are stored in 75/25 methanol/water. During storage and transport, the silica packing may dry out. It is recommended to flush the column with 10-20 column volumes of pure acetonitrile to activate it, then equilibrate with the mobile phase chosen for your experiment. If the mobile phase includes organic solvent-buffer salts, use a transition mobile phase of the same organic solvent and pure water to avoid salt precipitation. Gradually increase the flow rate from 0.1 mL/min to the desired operating conditions until the baseline stabilizes. If there are large fluctuations in column pressure and baseline, bubbles may have entered the column. In such cases, flush the column at a higher flow rate for 2-5 minutes (e.g., use a flow rate of 2.0 mL/min for a 4.6× 150mm column).

Sample and mobile phase

To avoid clogging the chromatography column, all samples and solvents, including buffer salts, must be filtered through a 0.45 μm or 0.22 μm filter membrane before use. Aqueous solutions of samples should not be injected directly; ensure that there is at least 50% organic phase.

Increasing the proportion of organic solvent in the mobile phase will reduce the retention of the solute. A typical reversed-phase chromatography mobile phase consists of water and buffer salts. When the proportion of organic solvent is high, poorly soluble phosphate or other non-volatile buffer salts should be used with caution or avoided to prevent precipitation, which can damage the column.

Maintenance

pH

Avoid using Blossmate® PSV C18 columns under conditions where the pH is lower than 2 or higher than 8. High pH can dissolve the silica gel, causing partial or complete detachment of the bonded phase from the silica surface, leading to reduced separation efficiency and changes in retention time. For optimal separation performance and extended column lifespan, use mobile phases with a pH range of 2.0-8.0.

Pressure

Although Blossmate® PSV C18 columns can be used at pressures up to 5000 psi, the normal operating pressure should be below 3000 psi. Prolonged operation at high pressure can damage the column and the infusion pump. Since pressure is a result of flow rate, the maximum flow rate will be limited by the pressure tolerance of the system. Generally, column pressure increases gradually with use. A sudden increase in pressure indicates clogging at the column inlet frit. In such cases, it is recommended to reverse flush the column with a suitable solvent.

Temperature

The maximum operating temperature is 60°C. Long-term operation at high temperatures (>75°C) can also damage the column, especially under high pH conditions (>8.5).

Cleaning of column

After multiple uses, impurities from some samples may adsorb onto the inlet frit or packing material. When accumulated to a certain extent, this can cause increased pressure and peak broadening. In such cases, after flushing out any buffer salts from the column, it is recommended to activate and flush the column with pure methanol or pure acetonitrile at a low flow rate for 10-20 column volumes. After cleaning, store the column in 100% pure acetonitrile.

Storage

For long-term storage, flush the column with at least 20-30 column volumes of 90% acetonitrile aqueous solution and store it accordingly. Each column is shipped with two removable plugs. To prevent the column bed from drying out, securely plug both ends of the column with the provided plugs.

Welch Materials, Inc.

www.welch-us.com
info@welchmat.com