Agilent Zorbax SB-Aq

Datasheet

General Description

Zorbax SB-Aq is a alkyl reversed-phase bonded phase designed to retain hydrophilic and other compounds when using highly aqueous mobile phases, including 100% water. The phase is based on StableBond bonding technology. The SB-Aq surface chemistry is designed to allow the alkyl phase to remain fully accessible in highly aqueous mobile phases, thereby preventing "phase collapse" (where an alkyl chain, such as a C18, collapses or mats down). Thus, separations on SB-Aq are reproducible from run to run over long column lifetimes. By contrast, many conventional ODS columns - and even some columns with claimed aqueous compatibility - may exhibit phase collapse, and thus show reduced retention or selectivity changes over time, leading to irreproducible results.

Zorbax SB-Aq offers:

- Reproducible retention of polar analytes in aqueous mobile phases
- Excellent stability in low pH mobile phases
- Complementary approach to ion-pair separations
- Usability with ion-pair reagents
- Rapid re-equilibration to initial aqueous conditions with gradients
- Alternative separation of biomolecules such as peptides, proteins and nucleotides
- Different selectivity compared to conventional ODS columns
- Like other StableBond reversed-phase columns, SB-Aq is highly stable in low pH mobile phases.

Safety Considerations

- All points of connection in liquid chromatographic systems are potential sources of leaks. Users of liquid chromatographic equipment should be aware of the toxicity or flammability of their mobile phases.
- Because of its small particle size, dry Zorbax packings are respirable. Columns should only be opened in a well-ventilated area.

Operational Guidelines

- The direction of flow is marked on the column label.
- While it is not harmful to the column, reverse flow should be avoided except to attempt removal of inlet pluggage (see "Column Care" section).
- A new column contains a mixture of methanol and water. Initially, care should be taken not to pass any mobile phase through the column that might cause a precipitate.
- This column is compatible with water and all common organic solvents.
- Avoid use of this column below pH 1.0 or above pH 8.
- Maximum operating pressure for columns up to 9.4 mm ID is 400 bar (6000 psi).
- Maximum operating temperature is 80°C.

NOTE: StableBond columns are designed for high stablity at low pH (e.g., pH < 4). However, all silica-based packings have some solubility in pH > 6 aqueous mobile phases. Therefore, when using silica-based columns under conditions of pH > 6, maximum column lifetime is obtained by operation at low temperatures (< 40°C) using low buffer concentrations in the range of 0.01 to 0.02M. Column stability at pH > 6 is also enhanced by avoiding phosphate and carbonate buffers [ref.: H.A. Claessens, M.A. van Straten, and J.J. Kirkland, *J. Chromatogr.* (A), 728 (1996) 259].

Column Care

The inlet frit on these columns have a nominal porosity of 2 µm. Samples that contain particulate matter larger than 2 µm will plug the column inlet frit and should be filtered before injection into the column. If solvent flow appears to be restricted (high column back-pressure), check first to see that solvent flow is unobstructed up to the column inlet. If the column has the restriction, there may be particulate matter on the inlet frit. An initial attempt should be made to remove any inlet debris by back-flushing 25-30 mL of mobile phase through the column. If this fails to return the column to near its original back-pressure, the inlet frit should be changed. To remove the frit, carefully loosen the nut at the inlet, taking care not to disturb the column bed. The frit should drop out when the fitting is tapped sharply on a hard surface. Install a new frit and carefully tighten the fitting.

Storage Recommendations

Long term storage of silica-based, bonded phase columns should be in a pure organic solvent, preferably an aprotic liquid such as 100% acetonitrile. If the column has been previously used with a buffered mobile phase, the buffer should first be removed by purging

the column with 20-30 column volumes of a 50/50 mixture of methanol or acetonitrile and water, followed by 20-30 column volumes of the pure solvent. Before storing the column, the end-fittings should be tightly capped with end-plugs to prevent the packing from drying out.

Columns may be safely stored for short periods in most mobile phases. However, to protect equipment, it is desirable to remove salts from the instrument and column by purging the column with the same mobile phase without the buffer (e.g. using 60/40 ACN/H_2O to remove a 60/40 ACN/0.02 M phosphate buffered mobile phase). Re-equilibration is rapid with the original mobile phase when using this approach, and any danger of corrosion from the salts is eliminated.

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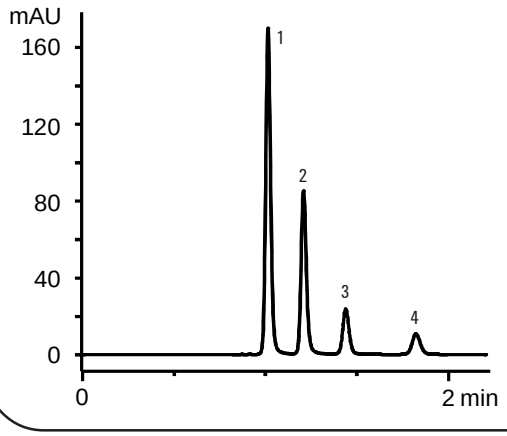
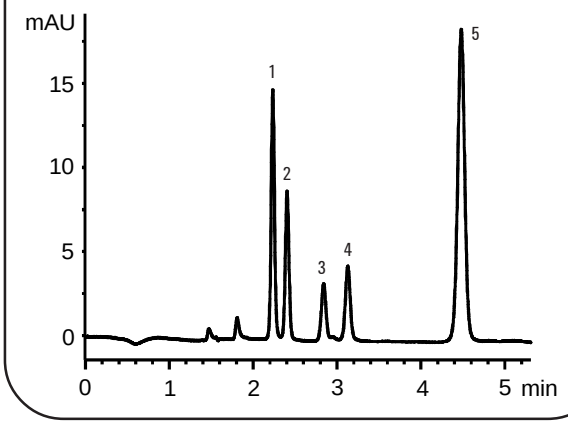
Water Soluble Vitamins

OPERATING CONDITIONS
Column: Zorbax SB-Aq, 4.6 mm ID x 150 mm (5 µm)
Mobile Phase: 5% MeOH / 95% Trifluoroacetic Acid (0.1%)
Flow Rate: 2.0 mL/min
Temperature: 35°C
Detector: UV (254 nm)
Peak Identity:
1. Thiamine
2. Nicotinic Acid
3. Pyridoxine
4. Niacinamide



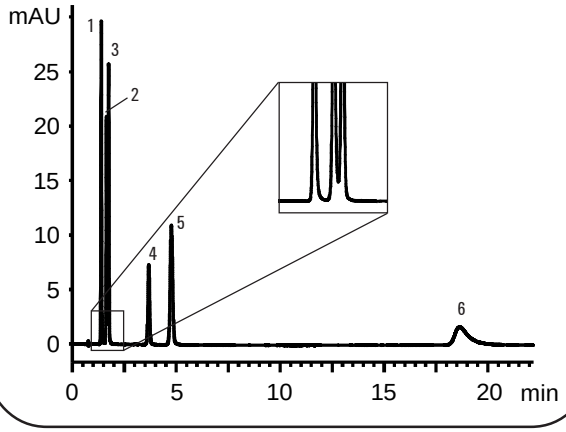
Organic Acids

OPERATING CONDITIONS
Column: Zorbax SB-Aq, 4.6 mm ID x 150 mm (5 µm)
Mobile Phase: 1% ACN / 99% 20 mM $NaHPO_4$, pH2
Flow Rate: 1.0 mL/min
Temperature: 35°C
Detector: UV (210 nm)
Peak Identity:
1. Lactic Acid
2. Acetic Acid
3. Citric Acid
4. Fumaric Acid
5. Succinic Acid



Purines / Pyrimidines

OPERATING CONDITIONS
Column: Zorbax SB-Aq, 4.6 mm ID x 150 mm (5 µm)
Mobile Phase: 50 mM NaOAc, pH 4.6
Flow Rate: 2.0 mL/min
Temperature: 35°C
Detector: UV (254 nm)
Peak Identity:
1. Cytosine
2. Fluorocytosine
3. Uracil
4. Guanine
5. Thymine
6. Adenine



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Printed in USA 08/11/03 Part No. 820644-014 D