Columns

IonPac® AS4A-SC Anion-Exchange Column

The IonPac AS4A-SC (solvent compatible) is a carbonate-selective anion exchange column designed for the fast, isocratic separation of inorganic anions, including fluoride, chloride, nitrite, bromide, nitrate, phosphate, and sulfate. Separation of the common inorganic anions can be achieved in less than 10 minutes. The IonPac AS4A-SC is suited for all applications associated with the IonPac AS4A which is the column specified for U.S. EPA Method 300.0 (A). Solvent compatibility permits easy column clean-up after the analysis of complex matrices.

Now sold under the Thermo Scientific brand

Thermo SCIENTIFIC

Determination of Inorganic Anions in Diverse Sample Matrices

- Source water and drinking water
- Municipal and industrial wastewater
- Industrial cooling water
- Hazardous waste extracts and dump site leachates
- Acid rain
- Foods and beverages
- Anionic counterions in pharmaceuticals and synthetic peptides
- Polymers such as polyols and polysulfonates
- Scrubber solutions

Superior Chromatographic Performance

- Fast, isocratic separation of inorganic anions in 8 minutes.
- Selectivity equivalent to the IonPac AS4A column.
- Specified column for U.S. EPA Method 300.0 (A).
- Unsurpassed durability.
- Direct injection of solvent extracts.
- Compatible with organic solvents to enhance analyte solubility, modify column selectivity, or for effective column clean-up.
- Direct transfer of 4-mm applications to the 2-mm column format for more economical operation, three- to fourfold reduction in eluent consumption, and fourfold increase in mass sensitivity.

DIONEX

High Efficiency Particle Structure

The IonPac AS4A-SC packing is a unique structure composed of a highly crosslinked core and a MicroBead™ anion-exchange layer attached to the surface, as shown in Figure 1. The substrate for the IonPac AS4A-SC column is a 13-µm diameter microporous resin bead, consisting of ethylvinylbenzene crosslinked with 55% divinylbenzene.

The anion exchange layer is functionalized with very hydrophilic quaternary ammonium groups. The latex bead anion-exchange layer has a controlled thickness, which results in excellent mass transfer characteristics and consequently highly efficient peaks.

Inorganic Anions in Drinking Water and Wastewater

The IonPac AS4A-SC is ideal for compliance monitoring of drinking water and wastewater. The AS4A-SC is the specified column in U.S. EPA Method 300.0 (A). The common inorganic anions can be separated in 8 minutes in a drinking water sample as illustrated in Figure 2. Wastewater can be a more complex sample than drinking water; however, with the AS4A-SC column, low levels of inorganic anions in wastewater can easily be determined as illustrated in Figure 3.

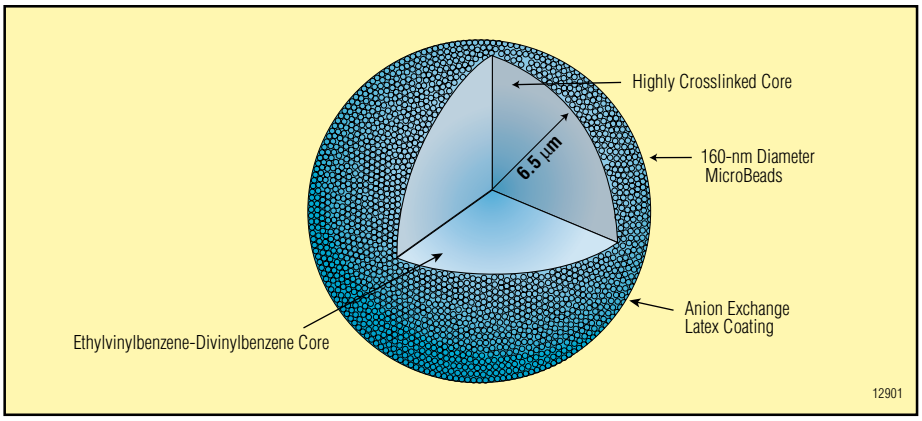

Figure 1. Microporous resin with anion-exchange functionalized latex layer.

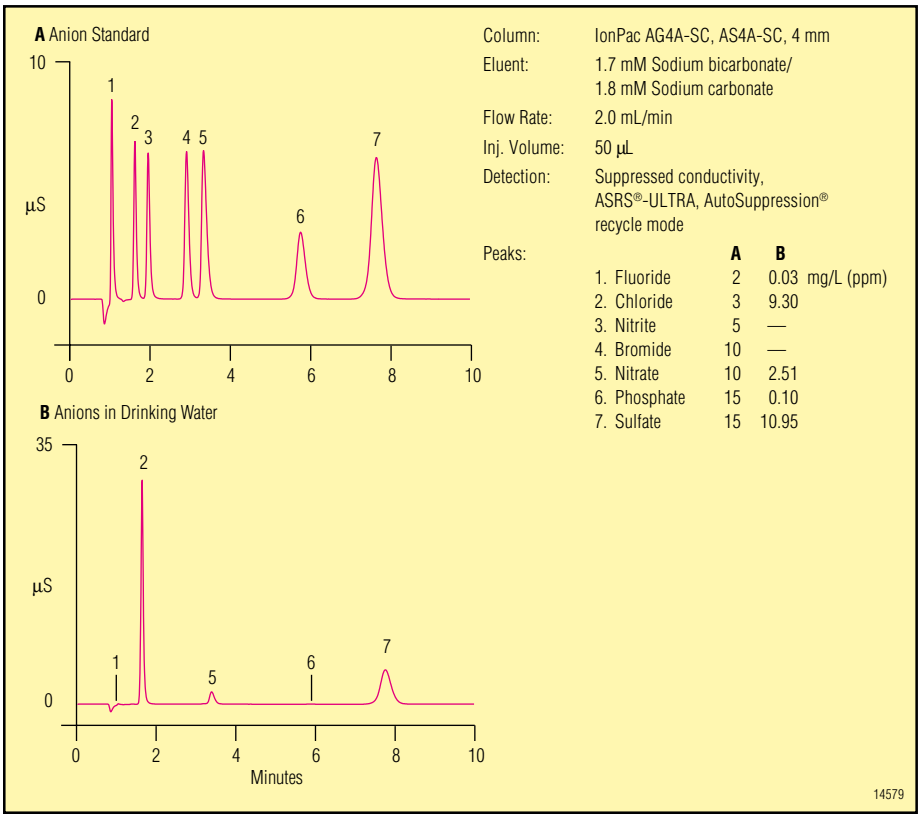

Figure 2. Determination of inorganic anions in a drinking water sample on an IonPac AS4A-SC column.

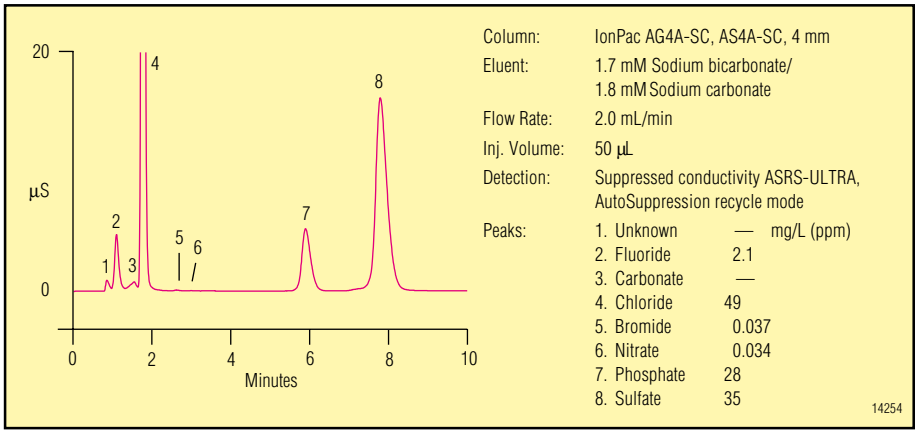

Figure 3. Determination of inorganic anions in a wastewater sample using an IonPac AS4A-SC column.

Fast Isocratic Separations

The IonPac AS4A-SC can be operated for fast analysis of inorganic anions using a 1.5 mM bicarbonate/ 4 mM carbonate eluent as illustrated in Figure 4.

Optimized Gradient Elution

Figure 5 illustrates the use of a tetraborate gradient for the resolution of fluoride, acetate, and formate along with the common inorganic anions.

Rugged and Reliable Column Technology

The unsurpassed durability of the AS4A-SC makes it ideal for the analysis of inorganic anions in complex sample matrices. The AS4A-SC column is recommended for applications requiring the determination of chloride, sulfate, and nitrate in tough samples including groundwater, wastewater, and industrial chemicals.

The highly crosslinked core of the IonPac AS4A-SC packing permits the use of HPLC solvents to alter column selectivity, control analyte solubility, facilitate column clean-up, and more importantly allows for the direct determination of inorganic anions in complex matrices. Figure 6 illustrates the direct injection of inorganic anions in a solvent extract on the IonPac AS4A-SC column.

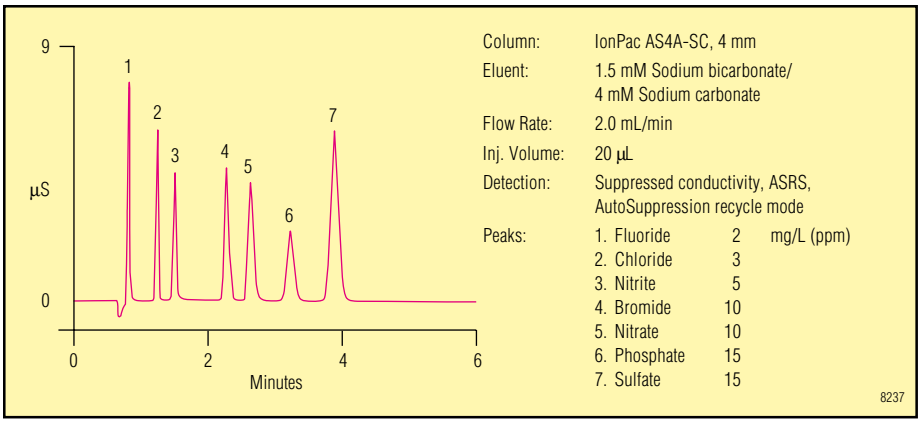

Figure 4. High efficiency IonPac AS4A-SC packing permits fast anion analysis.

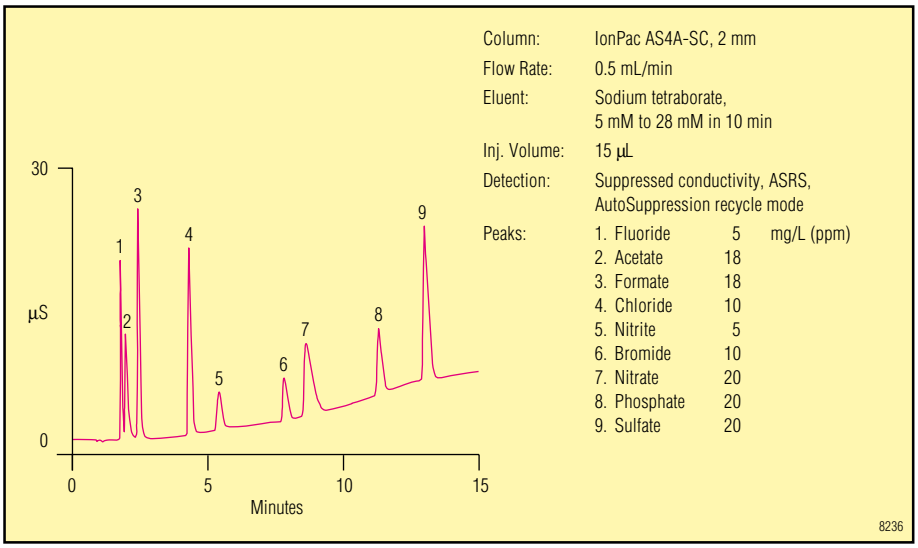

Figure 5. Tetraborate gradient separation of anions using the IonPac AS4A-SC 2-mm column.

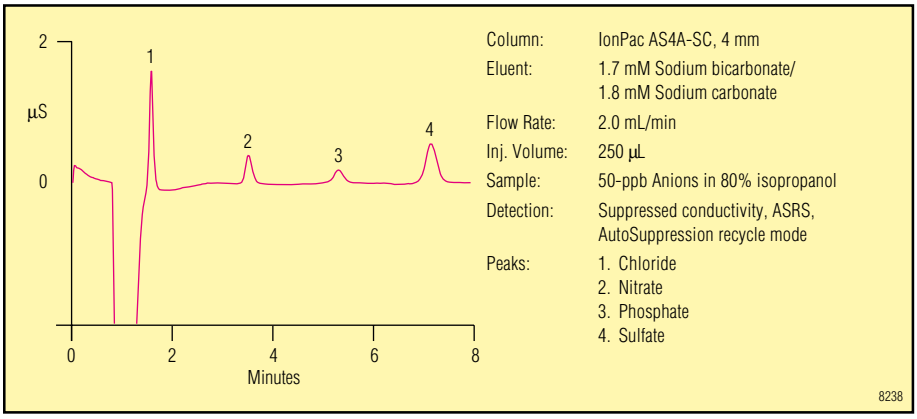

Figure 6. Direct injection of anions in a solvent extract using the IonPac AS4A-SC column.

Ordering Information

For optimum ease-of-use and economy, the IonPac AS4A-SC column should be used with the ASRS Anion Self-Regenerating Suppressor®. For added ease-of-use, Dionex offers an AS4A/AS4A-SC Eluent Concentrate and a line of anion standards to make your chromatography analysis even easier. Please refer to the following part numbers or the *Dionex Product Selection Guide* for more details.

When performing gradient anion exchange applications on the AS4A-SC, an Anion Trap Column, ATC, should be installed between the gradient pump and the injection valve to remove anionic contaminants from the eluent.

For 4-mm concentrator work, use the IonPac AG4A-SC guard column, TAC Anion Concentrator Column, or AMC-1 Anion MicroConcentrator when a single piston pump such as the DQP or DXP pump is used for sample delivery. Use the TAC-LP1 Anion Concentrator Column when the sample is delivered with a syringe or with a low pressure autosampler such as the AS40 or AS50. For 2-mm concentrator work, use the IonPac AG4A-SC guard column or the AMC-1 Anion MicroConcentrator when a single piston pump such as the DQP or DXP pump is used for sample delivery.

For optimum retention of fluoride from the water dip, a tetraborate gradient is required for the AS4A-SC; however, the IonPac AS14 column is recommended for isocratic determinations. The IonPac AS14 column also provides excellent separation of fluoride and acetate using an isocratic eluent. Please refer to the Dionex Product Selection Guide for more details on the IonPac AS14 anion-exchange column.

In the U.S., call (800) 346-6390, or contact the Dionex Regional Office nearest you. Outside the U.S., order through your local Dionex office or distributor. Refer to the following part numbers.

IonPac AS4A-SC Analytical Column (4 x 250 mm) ..... P/N 043174

IonPac AG4A-SC Guard Column (4 x 50 mm) ..... P/N 043175

IonPac AS4A-SC Analytical Column (2 x 250 mm) ..... P/N 043125

IonPac AG4A-SC Guard Column (2 x 50 mm) ..... P/N 043126

AS4A-SC Sodium Carbonate/ Bicarbonate Eluent Concentrate (500 mL of 100X concentrate) ..... P/N 039513

ATC-1 Anion Trap Column (for use with 4-mm columns) ..... P/N 037151

ATC (2-mm) Anion Trap Column (for use with 2-mm columns) ..... P/N 043131

TAC-2 Trace Anion Concentrator (3 x 35 mm) ..... P/N 043101

TAC-LP1 Trace Anion Concentrator (4 x 35 mm) ..... P/N 046026

AMC-1 Anion MicroConcentrator (2 x 15 mm) ..... P/N 051760

SPECIFICATIONS

Dimensions:
IonPac AS4A-SC
Analytical Column:
2 x 250 mm and 4 x 250 mm
IonPac AG4A-SC Guard Column:
2 x 50 mm and 4 x 50 mm

Maximum Operating Pressure:
4000 psi

Mobile Phase Compatibility:
pH 0-14; 0-100% HPLC solvents

Substrate Characteristics:
Bead Diameter: 13 µm
Crosslinking (%DVB): 55%

Latex Characteristics:
Functional Group:
Alkanol quaternary ammonium ion
Latex Crosslinking: 0.5%
Latex Diameter: 160 nm
Hydrophobicity: Medium Low

Capacity:
5 µeq (2 x 250 mm analytical column)
1 µeq (2 x 50 mm guard column)
20 µeq (4 x 250 mm analytical column)
4 µeq (4 x 50 mm guard column)

Column Construction:
PEEK with 10-32 threaded ferrule style end fittings. All components are nonmetallic.

DIONEX

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* Designed, developed, and manufactured under an NSAI registered ISO 9001 Quality System.

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LPN 034638-03 4M 7/99