

IonPac® AS14A Anion-Exchange Column



The IonPac AS14A is a high capacity, carbonate-selective anion-exchange column designed for the fast, isocratic separation of inorganic anions including fluoride, acetate, chloride, nitrite, bromide, nitrate, phosphate, and sulfate. Separation of the common inorganic anions can be achieved in 8 minutes on the AS14A-5 μ m (3 x 150 mm) column and 13 minutes on the AS14A-7 μ m (4 x 250 mm) column. The IonPac AS14A is suited for all IonPac AS4A, AS4A-SC, and AS14 column applications. The AS14A column offers excellent retention of fluoride from the water dip. Solvent compatibility permits easy column clean-up after the analysis of complex matrices.

Now sold under the
Thermo Scientific brand

Thermo
SCIENTIFIC

Superior Chromatographic Performance

- Fast, isocratic separation of common inorganic anions in 8 minutes (3 x 150 mm) or 13 minutes (4 x 250 mm) using a simple carbonate/bicarbonate eluent
- Designed to be used in IonPac AS4A, AS4A-SC, and AS14 applications with equivalent linearity and precision
- Meets or exceeds performance requirements of U.S. EPA Method 300.0 (A)
- Superior retention and quantification of fluoride
- Sodium or potassium hydroxide gradient optimizes difficult separations
- Compatible with organic solvents to enhance analyte solubility, modify column selectivity, or facilitate column clean-up

- Direct transfer of 4-mm applications to the 3-mm column format for more economical operation, twofold reduction in eluent consumption, and twofold increase in mass sensitivity

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



Inorganic Anions in Drinking Water and Wastewater

The IonPac AS14A is ideal for compliance monitoring of drinking water and wastewater. The AS14A meets or exceeds the performance requirements of U.S EPA Method 300.0 (A). The common inorganic anions can be separated in 8 minutes in drinking water as illustrated in Figure 3. Low levels of inorganic anions in wastewater can be determined easily with the AS14A column as shown in Figure 4, even though wastewater can be a more complex sample than drinking water.

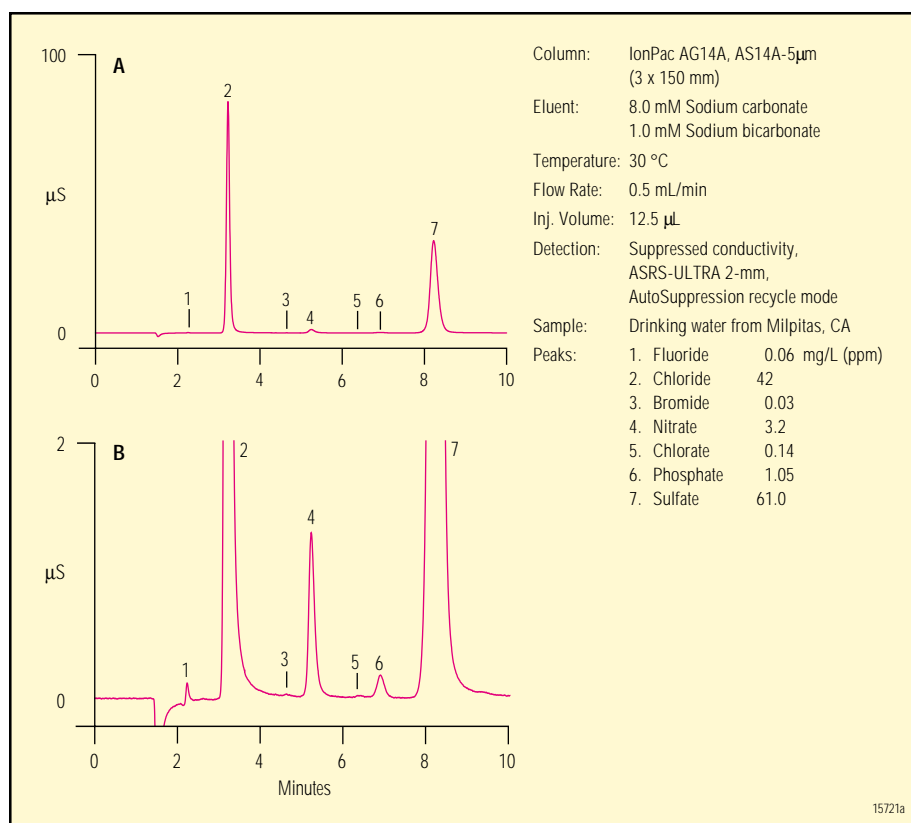


Figure 3. Determination of inorganic anions in a drinking water sample on an IonPac AS14A-5µm (3 x 150 mm) column.

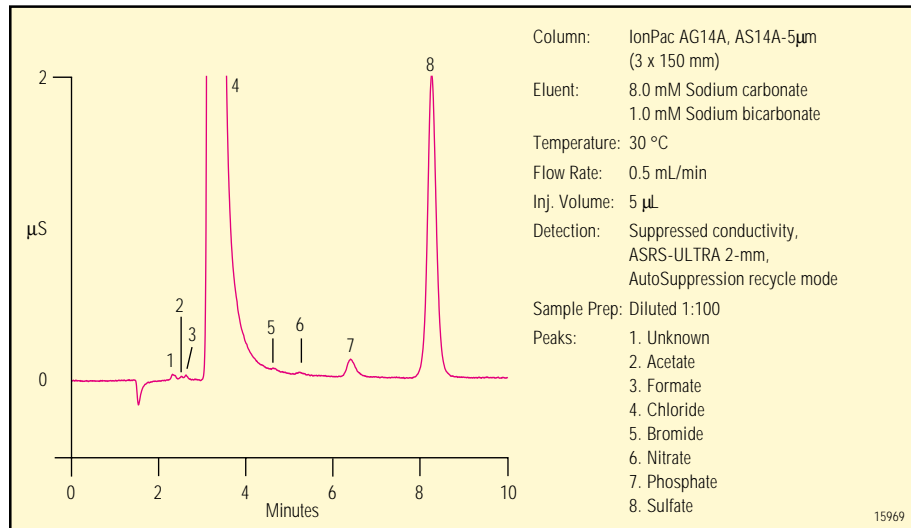


Figure 4. Determination of inorganic anions in a wastewater sample from a chemical manufacturer on an IonPac AS14A-5µm (3 x 150 mm) column.

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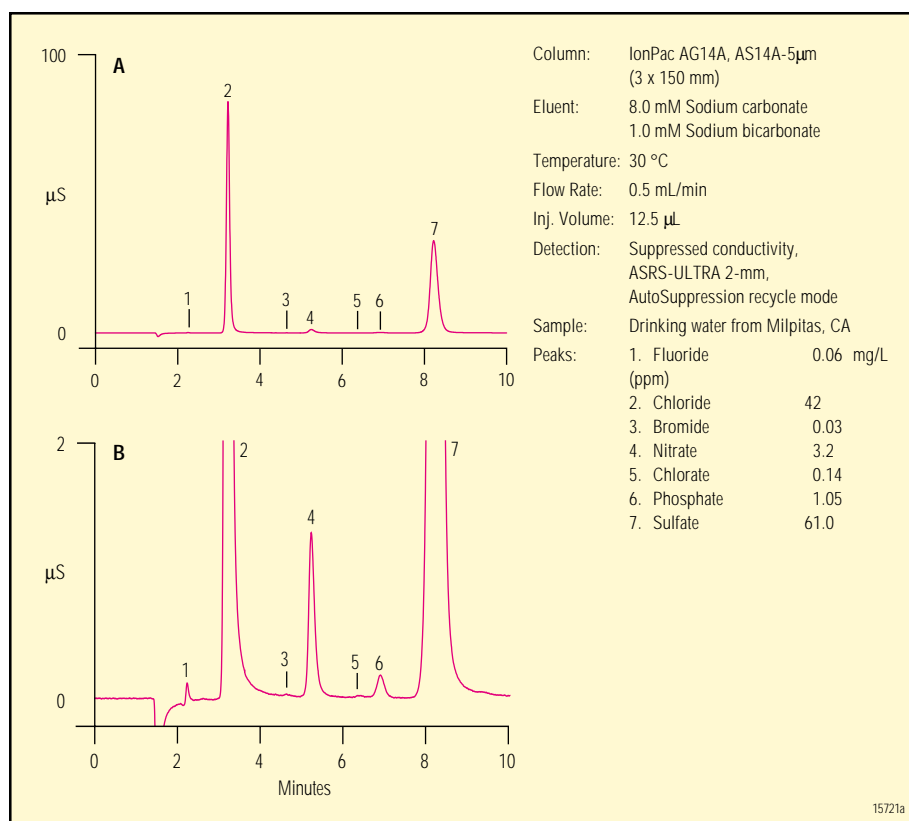


Figure 3. Determination of inorganic anions in a drinking water sample on an IonPac AS14A-5 μ m (3 x 150 mm) column.

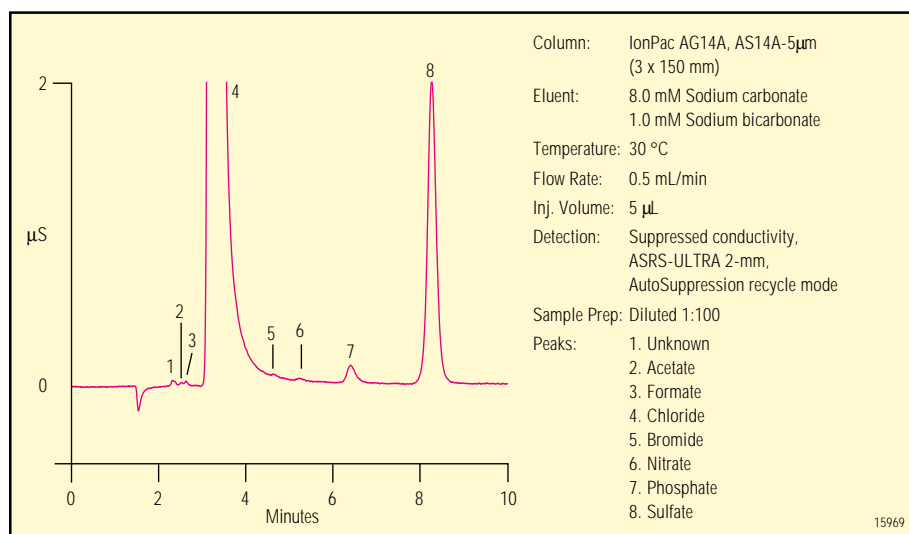
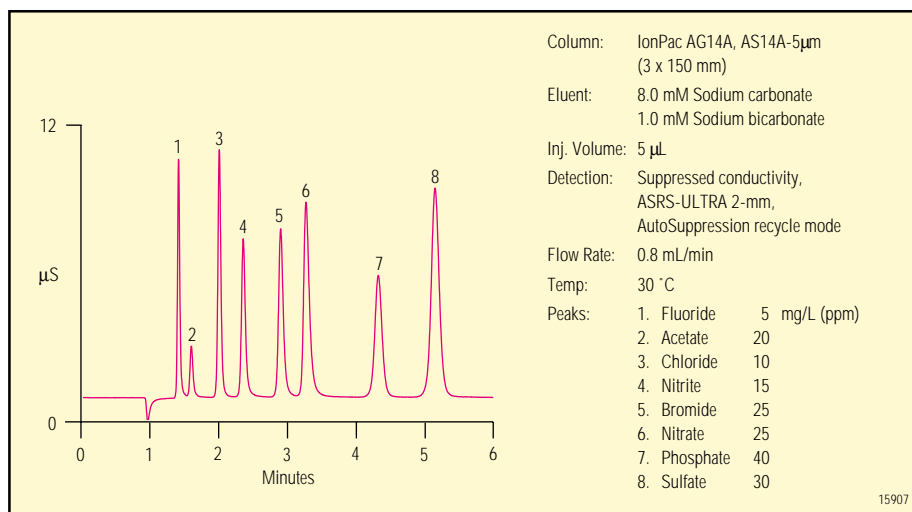


Figure 4. Determination of inorganic anions in a wastewater sample from a chemical manufacturer on an IonPac AS14A-5 μ m (3 x 150 mm) column.



Versatile Operation

The IonPac AS14A-5µm (3 x 150 mm) can be operated at higher flow rates for fast analysis of inorganic anions as shown in Figure 5.

Figure 6 illustrates use of the AS14A-5µm (3 x 150 mm) column with a hydroxide gradient for maximized resolution of fluoride, acetate, formate, and glycolate along with the common inorganic anions.

Extended Application Capabilities

The unique selectivity and high capacity of the AS14A column make it an ideal column for methods development of specialized anion applications. For example, anionic additives in personal care products can easily be determined. The AS14A provides excellent separation of monofluorophosphate, phosphate, and sulfate found in dental care products in less than 10 minutes using a standard carbonate/bicarbonate eluent as illustrated in Figure 7.

Figure 5. The IonPac AS14A-5µm (3 x 150 mm) packing permits fast anion analysis.

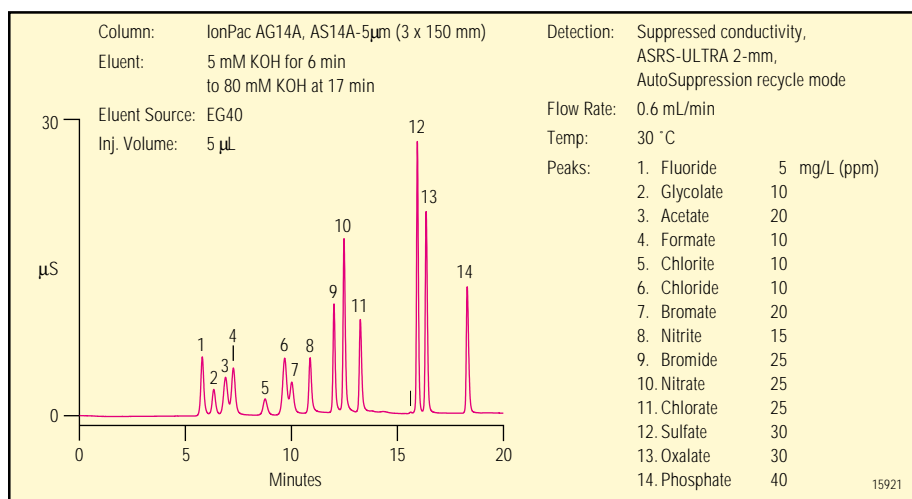


Figure 6. Potassium hydroxide gradient separation of anions using the IonPac AS14A-5µm (3 x 150 mm) column.

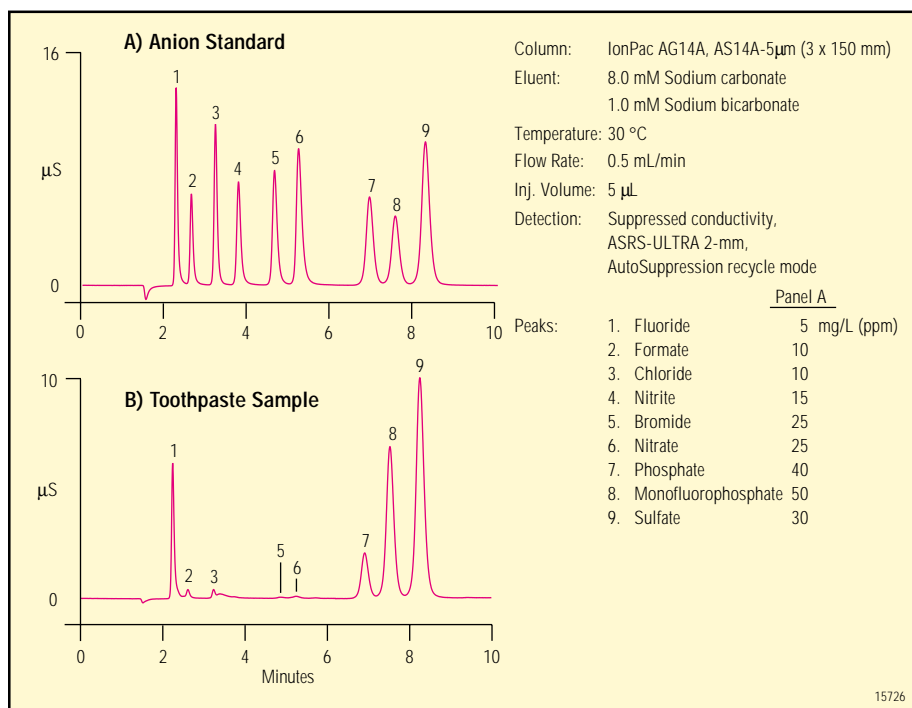


Figure 7. Determination of anionic additives in toothpaste on an IonPac AS14A-5µm (3 x 150 mm) column.

The IonPac AS14A also is ideal for the determination of anions in food and beverage samples containing high concentrations of carbonate. Carbonated bottled water can contain up to 500 mg/L (ppm) of carbonate but requires only minimal sample preparation (dilution and sonication) prior to analysis. Figure 8 illustrates the determination of inorganic anions in carbonated water using the AS14A column.

Ordering Information

For optimum ease of use and economy, the IonPac AS14A column can be used with either the ASRS Anion Self-Regenerating Suppressor or the Anion Atlas Electrolytic Suppressor. For additional ease of use, Dionex offers an AS14A Eluent Concentrate and a line of anion standards. Refer to the part numbers that follow or see the Dionex Product Selection Guide for more details.

When performing gradient anion-exchange applications using hydroxide eluents on the AS14A, an Anion Trap Column (ATC-3) 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 AG14A 4-mm guard column, TAC Anion Concentrator Column, or AMC-1 Anion MicroConcentrator when a single-piston pump such as the DQP or DXP 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. For 3-mm concentrator work, use the IonPac AG14A 4-mm guard column or the AMC-1 Anion MicroConcentrator when a single-piston pump such as the DQP or DXP

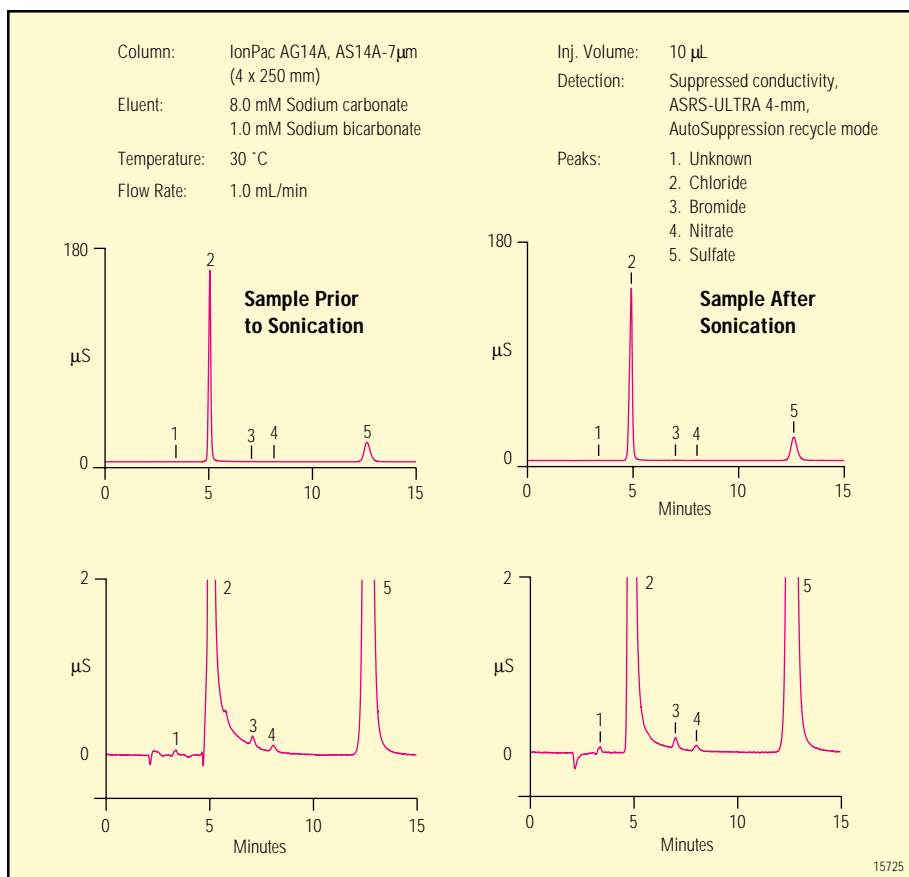


Figure 8. Determination of inorganic anions in carbonated water on an IonPac AS14A-7µm (4 x 250 mm) column.

SPECIFICATIONS

Dimensions:

Analytical Column:
3 x 150 mm or 4 x 250 mm

Guard Column:
3 x 30 mm or 4 x 50 mm

Maximum Operating Pressure:
4000 psi

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

Substrate Characteristics:
Bead Diameter: 5 µm (3 x 150 mm)
7 µm (4 x 250 mm)

Pore Size: 100 Å
Crosslinking (%DVB): 55%

Ion-Exchange Group:

Surface-functionalized alkyl
quaternary ammonium ion

Functional Group Characteristics:

Hydrophobicity: Moderate

Capacity:

40 µeq (3 x 150 mm analytical column)
8 µeq (3 x 30 mm guard column)
120 µeq (4 x 250 mm analytical column)
24 µeq (4 x 50 mm guard column)

Column Construction:

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

ORDERING INFORMATION

In the U.S., call 1-800-346-6390 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.

| Description | Part Number |
|---|-------------|
| IonPac AS14A Columns | |
| IonPac AS14A-7 μ m Analytical Column (4 x 250 mm) | 056904 |
| IonPac AG14A-7 μ m Guard Column (4 x 50 mm) | 056897 |
| IonPac AS14A-5 μ m Analytical Column (3 x 150 mm) | 056901 |
| IonPac AG14A-5 μ m Guard Column (3 x 30 mm) | 056899 |
| Eluent Concentrate | |
| AS14A Sodium Carbonate/Bicarbonate Eluent Concentrate (250 mL of 100X concentrate) | 056937 |
| Trap Columns | |
| ATC-3 Anion Trap Column (for use with 4-mm columns) | 059660 |
| ATC-3 (2-mm) Anion Trap Column (for use with 3-mm columns) | 079932 |
| Concentrator Columns | |
| TAC-2 Trace Anion Concentrator (3 x 35 mm) | 043101 |
| TAC-LP1 Trace Anion Concentrator (4 x 35 mm) | 046026 |
| AMC-1 Anion MicroConcentrator (2 x 15 mm) | 051760 |



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



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