

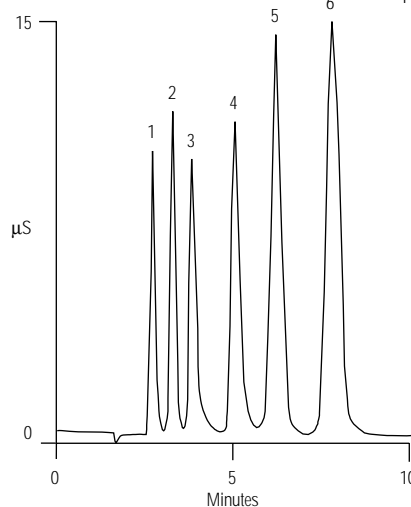


The IonPac CS12 provides isocratic separations of lithium, sodium, ammonium, potassium, magnesium and calcium in 8 minutes using inexpensive eluents such as hydrochloric acid or methanesulfonic acid. The IonPac CS12 column retains resolving power for samples containing high ionic levels, making it ideal for analysis of environmental, power plant, process, and acid-digest samples. Solvent compatibility allows for the analysis of complex matrices and easy column clean-up.

Now sold under the  
Thermo Scientific brand

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Column: IonPac CS12 (4 mm)  
Eluent: 20 mM HCl or methanesulfonic acid  
Flow Rate: 1 mL/min  
Detection: Suppressed conductivity  
Injection Volume: 25- $\mu$ L loop



Peaks:

1. Lithium	1 ppm
2. Sodium	4
3. Ammonium	10
4. Potassium	10
5. Magnesium	5
6. Calcium	10

**Figure 1** The IonPac CS12 cation exchange column provides fast isocratic analysis of mono- and divalent cations using simple eluents.

Unique features of the IonPac CS12 cation exchange column include:

- Fast run times
- Easy, economical operation
- Long-term stability and reproducibility
- Solvent compatible packing with highly cross-linked substrate
- High efficiency and capacity for analysis of cations in complex matrices
- Effective column clean-up using organic solvents

#### FAST ISOCRATIC ANALYSIS OF ALKALI AND ALKALINE EARTH CATIONS

Common monovalent and divalent cations can be separated isocratically by the IonPac CS12 column in 8 minutes. For fast, efficient

separations, you no longer need to perform two separate runs, gradient step changes, or column switching.

#### ECONOMICAL OPERATION

The IonPac CS12 column is designed to improve monovalent separations and to reduce operating costs by elimination of the need for DAP•HCl in the eluent.

The IonPac CS12 cation exchange columns are also available in the 2-mm I.D. format so you can take advantage of the reduced operating costs characteristic of 2-mm column operation. For more information about 2-mm (microbore) column operation, please contact your local Dionex sales representative.

## HIGH LOADING CAPACITY

The IonPac CS12 maintains resolving power for samples high in ionic strength. Peaks from a sample containing 50 ppm of sodium and 0.05 ppm of ammonium are easily baseline-resolved (Fig. 2).

## UNIQUE CARBOXYLATE CATION EXCHANGER

The IonPac CS12 column is a carboxylate-functionalized cation exchanger that permits rapid isocratic elution of monovalent and divalent cations with dilute eluents. The IonPac CS12 packing is a 8.0- $\mu$ m diameter macroporous particle consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene. The substrate bead is coated with a unique carboxylic acid functionalized layer.

## HIGHLY EFFICIENT STRUCTURE

The structure of the IonPac CS12 macroporous particle concentrates a vast number of cation exchange sites on the surface of the substrate, thus maintaining very short diffusion paths and high efficiency.

## LONG-TERM DURABILITY

The IonPac CS12 packing is functionalized with a unique carboxylate functional group that ensures long-term column stability. The column is compatible with acidic eluents and samples. The performance of the CS12 does not deteriorate with the injection of low-pH samples, thus acid-digest samples can be analyzed without adjusting the pH.

## SOLVENT COMPATIBLE PACKING

With HPLC solvent compatibility, acetonitrile or tetrahydrofuran can be used for efficient column clean-up, to enhance sample solubility, or to modify column selectivity. This feature allows complex matrices to be analyzed with minimal sample preparation. The use of alcohols should be avoided.

## SPECIFICATIONS

### Column

Analytical Column Dimensions:  
2 x 250 mm and 4 x 250 mm

Guard Column Dimensions:  
2 x 50 mm and 4 x 50 mm

Maximum Operating Pressure:  
4000 psi (27 MPa)

Mobile Phase Compatibility:  
Acidic eluents; HPLC solvent compatible. Alcohols should be avoided.

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

### SUBSTRATE

Bead Diameter: 8.0  $\mu$ m

Cross-linking (%DVB): 55%

Macroporous Dimensions:

Pore size — 60Å

Surface area — 300 m<sup>2</sup>/g

## FUNCTIONAL GROUP

Capacity (per column):

0.7 meq (2 x 250 mm)

2.8 meq (4 x 250 mm)

Ion Exchange Group:

Carboxylic acid

Surface Characteristics:

Hydrophobic

## ORDERING INFORMATION

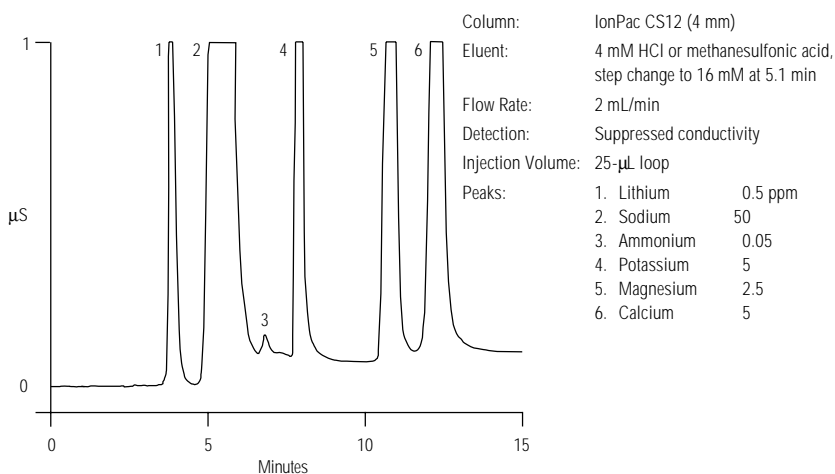
In the U.S., call 1-800-346-6390, or contact the Dionex Regional Office nearest you. Outside the U.S., order through your local Dionex Office or distributor. Refer to the part numbers below.

*IonPac CS12 Analytical Column*  
(4 x 250 mm) ..... P/N 44001

*IonPac CG12 Guard Column*  
(4 x 50 mm) ..... P/N 44002

*IonPac CS12 Analytical Column*  
(2 x 250 mm) ..... P/N 44019

*IonPac CG12 Guard Column*  
(2 x 50 mm) ..... P/N 44020



**Figure 2** Trace level quantification of ammonium in brine (1000:1 ratio) is fast and easy using the IonPac CS12 column coupled with suppressed conductivity detection.

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