

Thermo Scientific Dionex IonPac CS19 and CS19-4 μ m Cation-Exchange Column Quick Start

1. Overview

The Thermo Scientific™ Dionex™ IonPac™ CS19 and CS19-4 μ m columns are used with suppressed conductivity detection for the analysis of the common inorganic cations (Lithium, Sodium, Ammonium, Potassium, Magnesium, and Calcium) as well as small polar amines. Conditioning of the column bed, by following this Quick Start procedure, is **required prior to initial use and after long-term storage**. The Quick Start procedure will ensure extended column lifetime and reproducibility. This procedure also prevents any storage solution or column residuals from flowing to the suppressor, extending its lifetime and expediting the system equilibration time. For 4 mm and 2 mm columns, follow the procedure in section 2. For capillary columns, follow the procedure in section 3. Section 4 describes an alternate conditioning program for capillary columns, if an offline pump is available.



WARNING

If your mobile phase composition generates back pressure in excess of the maximum operation pressure, reduce the flow rate to ensure the upstream back pressure of the column is less than the maximum operation pressure.

The maximum pressure limit for the Dionex IonPac CS19 column is 3000 psi (20.7 MPa). The maximum pressure limit for the Dionex IonPac CS19-4 μ m column is 5000 psi (34.5 MPa).

2. Gradient Program for Dionex IonPac CS19 and CS19-4 μ m 2 \times 250 mm and 4 \times 250 mm columns

- After connecting the inlet of the column to the IC system in the correct flow direction, direct the outlet of the column to waste.
- Pump eluent through the column using the conditioning flow rates and gradient program below.
- Proceed to section 5 to test the column under Quality Assurance Report conditions.

NOTE: *If an offline gradient pump is not available, be sure to bypass the EGC and connect the pump directly to the injection valve or column*

Conditioning flow rate for 4 mm columns is 0.5 mL/min.
Conditioning flow rate for 2 mm columns is 0.13 mL/min.

Time	%E1 DI Water	%E2 80 mM MSA	%E3 95% Acetonitrile
0	90	10	0
5	90	10	0
10	80	10	10
60	80	10	10
65	90	10	0
75	90	10	0

3. Isocratic Program for *Dionex IonPac CS19 and CS19-4 μ m 0.4x250 mm Column*

- a. Prepare 8 mM MSA with 10% acetonitrile in DI water (50 mL is sufficient).
- b. Bypass the EGC and prime the pump using this solution.
NOTE: Do not pump acetonitrile through the EGC. Acetonitrile is not compatible with the EGC.
- c. After priming, connect the column directly to the pump and direct the outlet of the column to waste.
- d. Pump this solution through the column, directly to waste, for one hour at 10 μ L/min.
- e. Disconnect the column and change the 8 mM MSA with 10% acetonitrile solution to DI water only.
- f. Prime the pump with DI water to remove the acetonitrile and MSA, and then pump DI water through the lines for 60 minutes at 0.1 mL/min.
- g. Connect the pump back to the EGC.
- h. Reconnect the column to the injection valve directing the column outlet to waste.
- i. Using the EGC, pump 8 mM MSA through the column directly to waste for one hour at 10 μ L/min.
- j. Proceed to section 5 to test the column under Quality Assurance Report conditions.

4. Alternate Program for *Dionex IonPac CS19 and CS19-4 μ m 0.4x250 mm Column* if an offline gradient pump is available

- a. Set up the eluent bottles as described in section 2.
- b. 8 mM MSA/9.5% acetonitrile eluent: Prime pump with 8 mM MSA (10% of E2) and 9.5% acetonitrile (10% of E3). After priming, pump 10 mL through the mixer at 2 mL/min (rinse out the mixer at standard flow rate). Connect the Dionex IonPac CS19 or CS19-4 μ m 0.4x250 mm column and wash with this eluent (8 mM MSA/9.5% acetonitrile) for one hour at 10 μ L/min. Continue to step b.
- c. 8 mM MSA eluent: Remove the capillary column from the pump and prime pump with 8 mM MSA (10% of E2). After priming, pump 10 mL through the mixer at 2 mL/min (rinse out the mixer at standard flow rate). Reconnect the Dionex IonPac CS19 or CS19-4 μ m 0.4x250 mm and wash with this eluent (8 mM MSA (10% of E2) for one more hour at 10 μ L/min.
- d. Proceed to section 5 to test the column under Quality Assurance Report conditions.

5. Quality Assurance Report

Once the column conditioning is complete, connect the column outlet to the suppressor. The last eluent concentration used in the conditioning step is 8 mM MSA, the same eluent used in the Quality Assurance Report (QAR). Test the column performance under the conditions in the QAR. Continue making injections of the test standard until consecutive injections of the standard give reproducible retention times. Column equilibration is complete when consecutive injections of the standard give reproducible retention times.

6. Storage

Store the column in 8mM Methanesulfonic acid and seal both ends immediately with column plugs to avoid drying of the column.

Tip

*For additional information, please refer to the **Dionex IonPac CS19 Product Manual (Document No. 065440)** or the **Dionex IonPac CS19-4 μ m Product Manual (Document No. 065472)**.*