



DETERMINATION OF INORGANIC ANIONS IN WATER SAMPLES

Lumex Method M 01-30 (2013)

INTRODUCTION

The method allows determination of inorganic anions (chloride, nitrite, sulfate, nitrate, fluoride, and phosphate as soluble ortho-phosphate) in samples of **natural**, **potable**, and **cleaned waste water**.

MEASUREMENT METHOD

The capillary electrophoresis method for determination of inorganic anions' concentrations is based on differential migration and separation of anions in the electric field due to different electrophoretic mobility. Identification and quantitative determination of the analysed anions is performed by indirect detection by measuring the UV absorption at 254 or 374 nm wavelengths.

MEASUREMENT RANGE

Measurement ranges of inorganic anions are listed below.

Anions	Measurement ranges*, mg/L	Anions	Measurement ranges*, mg/L
Chloride	0.5–200	Nitrite	0.2–50
Fluoride	0.1–10	Phosphate	0.25–25
Nitrate	0.2–50	Sulfate	0.5–200

* without dilution.

If the mass concentration of one or several ions exceeds the upper limit of calibration, the sample should be diluted with distilled water to reduce the mass concentration of these ions to the middle part of the calibration range.

EQUIPMENT AND REAGENTS

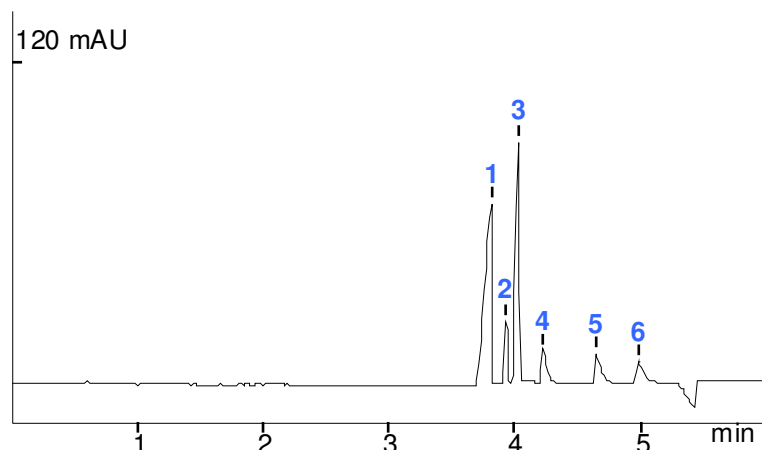
The CAPEL[®] capillary electrophoresis system is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under WINDOWS[®] XP/7/8 operating system with installed dedicated software package ELFORUN[®]. All reagents must be of analytical grade or better.

EXAMPLES OF REAL ANALYSES

BGE: chromate, with DEA and 18-crown-6
Capillary: $L_{\text{eff}}/L_{\text{tot}}$ 50/60 cm, ID 75 μm
Injection: 300 mbar x sec
Voltage: -17 kV
Temperature: RT
Detection: 254 nm, indirect

Sample: calibration solution

- 1 – chloride (200 mg/L)
- 2 – nitrite (50 mg/L)
- 3 – sulfate (200 mg/L)
- 4 – nitrate (59 mg/L)
- 5 – fluoride (10 mg/L)
- 6 – phosphate (25 mg/L)

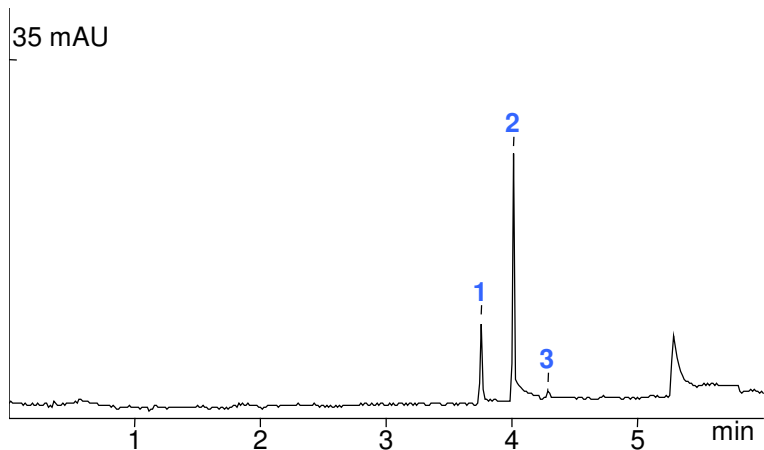




Sample: tap water

Measurement results:

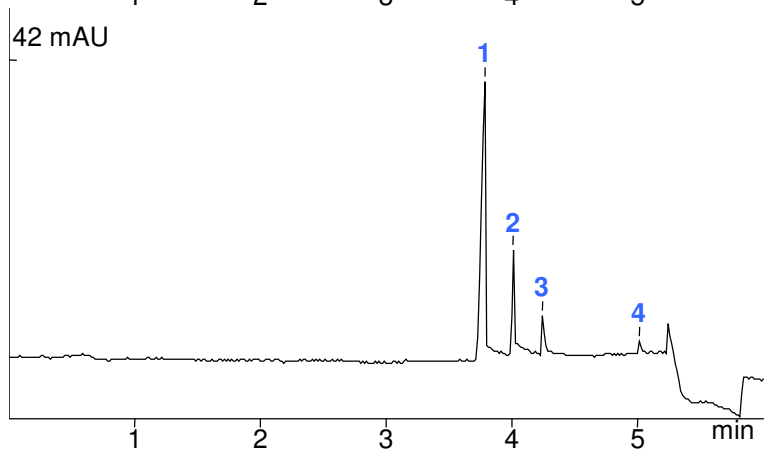
- 1 – chloride (9.1 mg/L)
- 2 – sulfate (26 mg/L)
- 3 – nitrate (1.1 mg/L)



Sample: waste water (dilution 1:9)

Measurement results:

- 1 – chloride (566 mg/L)
- 2 – sulfate (178 mg/L)
- 3 – nitrate (120 mg/L)
- 4 – phosphate (22.6 mg/L)



The information in this leaflet is supplemental. To get more specific, please contact the manufacturer of CAPEL® CE systems LUMEX INSTRUMENTS Group.

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