



Determination of inorganic anions in water samples

INTRODUCTION

The method is used for the determination of the mass concentration of inorganic anions: chloride, nitrite, sulfate, nitrate, fluoride, phosphate in samples of **drinking, natural, waste waters, and other aqueous matrices** by capillary electrophoresis.

MEASUREMENT METHOD

The measurement method is based on capillary zone electrophoresis with indirect UV detection at the wavelength of 254 nm.

MEASUREMENT RANGE

The measurement ranges for the components are presented in the table below.

Anions	Measurement range, mg/L	Anions	Measurement range, mg/L
Chloride	0.5–20 000	Nitrite	0.2–100
Fluoride	0.1–25	Phosphate	0.25–100
Nitrate	0.2–500	Sulfate	0.5–20 000

Organic acids (formic, acetic, citric, etc.), other inorganic anions (bromide, iodide, etc.) and neutral organic compounds do not deteriorate target components determination. Soluble carbonates with the concentration ratio more than 1000:1 in respect to phosphate may deteriorate the determination of phosphates.

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® operating system with Elforun software installed.

Lumex Instruments set, order **No. 0300001754**.

Lumex Instruments kit, order **No. 0300001523** (available in certain countries, contact your local distributor).

EXAMPLES OF REAL ANALYSES

BGE: chromate, with diethanolamine and CTA-OH

Capillary: $L_{\text{eff}}/L_{\text{tot}}$ 50/60 cm, ID 75 μm

Injection: 300 mbar \times s

Voltage: -25 kV

Temperature: 20 °C

Detection: 254 nm

Sample: natural water

Found (mg/L):

- 1 – chloride (5.5)
- 2 – sulfate (11.2)
- 3 – nitrate (1.1)
- 4 – fluoride (0.2)
- 5 – formate
- 6 – phosphate (0.67)
- 7 – carbonate

