



DETERMINATION OF **INORGANIC ANIONS** IN WATER SAMPLES ACCORDING TO EPA 6500 AND ASTM D 6508-00 TEST METHODS

EPA 6500
ASTM D 6508-00

INTRODUCTION

The method allows determination of inorganic anions: fluoride, bromide, chloride, nitrite, nitrate, sulfate, and *ortho*-phosphate ions in samples of natural, potable and 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 analyzed anions is performed using indirect detection by measuring the UV absorption.

MEASUREMENT RANGE

Anions	Measurement range, mg/L
Nitrite	0.1–50
Nitrate	0.1–50
<i>ortho</i> -Phosphate	0.1–200
Sulfate	0.1–1000
Fluoride	0.1–25
Bromide	0.1–50
Chloride	0.1–1000

If the concentration of an anion in an analyzed sample exceeds the upper limit of the measurement range, it is allowed to dilute the sample so that the concentration would be in the range from 5 to 50 mg/L (or for fluoride from 2.5 to 25 mg/L).

EQUIPMENT AND REAGENTS

The "CAPEL[®]" capillary electrophoresis system with high-voltage negative polarity is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under "WINDOWS[®] 2000/XP" operating system with installed dedicated software package for acquisition and processing of chromatography data.

All reagents must be of analytical grade or better.

EXAMPLES OF REAL ANALYSES

Buffer: chromate, with TTAOH, CHES, and calcium gluconate

Capillary: L_{EFF}/L_{TOTAL} 50/60 cm, ID 75 µm

Injection: 300 mbar x sec

Voltage: – 15 kV

Temperature: RT

Detection: 254 nm, indirect

Sample: test solution

1 – chloride (20 mg/L)

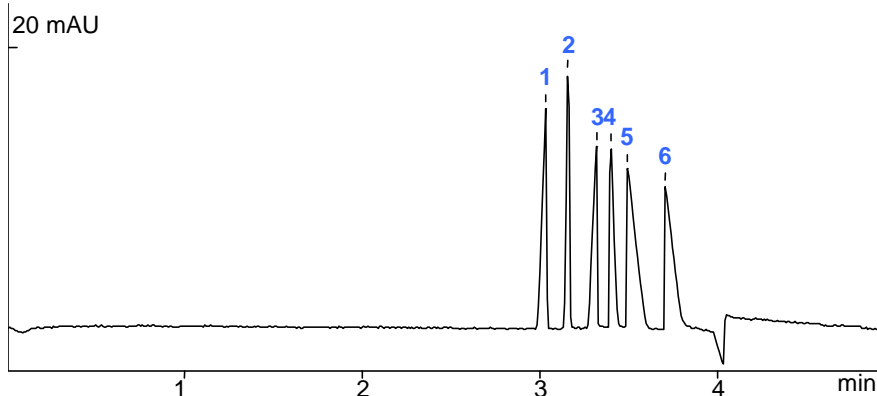
2 – nitrite (20 mg/L)

3 – sulfate (20 mg/L)

4 – nitrate (20 mg/L)

5 – fluoride (10 mg/L)

6 – phosphate (20 mg/L)





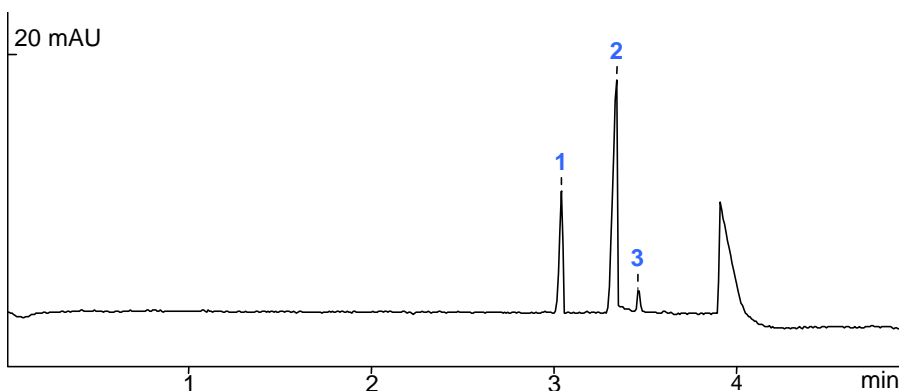
Sample: tap water

Measurement results:

1 – chloride (7.78 mg/L)

2 – sulfate (26.3 mg/L)

3 – nitrate (1.66 mg/L)



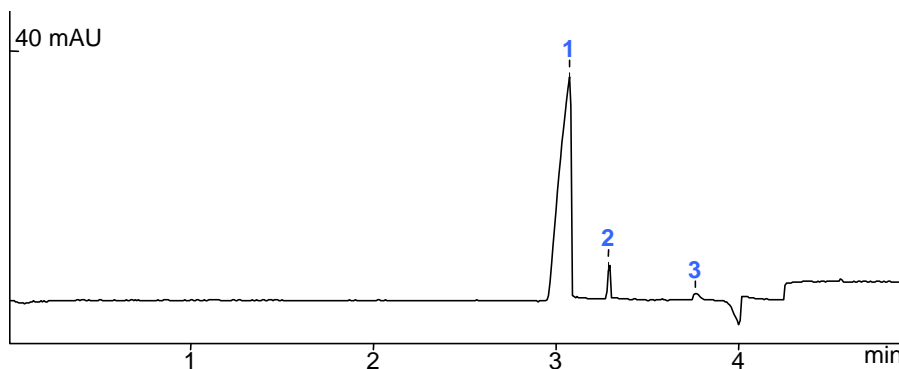
Sample: wastewater (dilution 1:4)

Measurement results:

1 – chloride (532 mg/L)

2 – sulfate (23.1 mg/L)

3 – phosphate (6.8 mg/L)



The contents on this paper are subject to change without notice.