



Determination of **inorganic cations** in beverages

INTRODUCTION

The method is used for the determination of the mass concentration of potassium, sodium, magnesium and calcium in samples of

- non-alcoholic products, including sports and energy drinks;
- juices and juice products;
- wines and wine products, including cognac distillates;
- alcoholic beverages, beer and beer products

by capillary electrophoresis.



MEASUREMENT METHOD

The measurement method is based on capillary zone electrophoresis with indirect UV detection at the wavelength of 267 nm.

MEASUREMENT RANGE

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

Component	Measurement range, mg/L
Potassium	1.0–4000
Sodium, calcium	1.0–500
Magnesium	0.5–500

Cations of ammonium, lithium, strontium, barium, manganese, iron (II), amines (histamine, methylamine, propylamine, etc.), vitamin B₄ (choline chloride) and amino acids (lysine, arginine, histidine) do not deteriorate target components determination.

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. 0300002735**.

EXAMPLES OF REAL ANALYSES

BGE: benzimidazole, with tartaric acid and 18-crown-6
Capillary: $L_{\text{eff}}/L_{\text{tot}}$ 50/60 cm, ID 75 µm
Injection: 150 mbar × s
Voltage: 25 kV
Temperature: 20 °C
Detection: 267 nm

Sample: wine (dilution factor – 25)

Found (mg/L):

- 1 – potassium (1210)
- 2 – sodium (47)
- 3 – magnesium (155)
- 4 – calcium (60)

