



Determination of **phosphorus** in milk

INTRODUCTION

The method is used for the determination of the mass fraction of phosphates (phosphorus, P) in samples of **drinking milk, cream and dairy raw materials (raw and concentrated milk, milk powder; raw cream and cream powder)** by capillary electrophoresis.

MEASUREMENT METHOD

The measurement method is based on extraction of phosphates from a solid sample by water (or dilution of a liquid sample) and their determination by capillary electrophoresis with indirect UV detection at the wavelength of 254 nm.

MEASUREMENT RANGE

The measurement ranges for the mass fraction of phosphorus is 20–8000 mg/kg.

EQUIPMENT AND REAGENTS

The following equipment and reagents are used in the measurements:

- Capel capillary electrophoresis system;
- standard solution of phosphate (1000 mg/L);
- chromium (VI) oxide, $\geq 99\%$;
- hexadecyltrimethylammonium hydroxide (CTA-OH) solution 10 wt. % in water;
- diethanolamine (bis(2-hydroxyethyl)amine, DEA), $\geq 98.5\%$;
- sodium hydroxide, $\geq 98\%$;
- hydrochloric acid, 36.5–38 %.

Data acquisition, collection, processing, and output are performed using a personal computer running under Windows® operating system with Elforun software installed.

EXAMPLES OF REAL ANALYSES

BGE: chromate, with diethanolamine and CTA-OH

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

Temperature: 20 °C

Detection: 254 nm

Sample: pasteurized milk

Found (mg/kg):

1 – phosphate (560 as P)

