



DETERMINATION OF **TOTAL SULFUR DIOXIDE** IN WINE AND BEER **LUMEX Method M 04-78-2012**

INTRODUCTION

Method allows determination of mass concentration of total sulfur dioxide (sulfurous acid and its salts, food additives E220–E228) in wine, wine materials, beer and beer products by capillary electrophoresis (CE) using capillary electrophoresis system “CAPEL®-105M”.

The mass concentration of total sulfur dioxide is regulated by normative documents to be held within 100–400 mg/L for different types of wine and wine materials and within 20–50 mg/L for beer products. According to European and Russian regulations it is allowed not to indicate on the labels the presence of sulfur dioxide in beverages if its concentration is less than 10 mg/L.

MEASUREMENT METHOD

The CE method for the determination of mass concentration of total sulfur dioxide is based on a basic hydrolysis of the sample with its subsequent separation in a fused silica capillary under the influence of applied electric field. Identification and quantification of the analyzed sulfur dioxide is performed by indirect detection measuring UV absorption at 374 nm.

MEASUREMENT RANGE

Measurement range for total sulfur dioxide is **5.0–1000 mg/L**.

The presence of other inorganic anions (chloride, sulfate, nitrate, fluoride, phosphate, and carbonate) as well as organic acids (acetic, tartaric, malic, citric, etc.) in a quantity typical for these types of products does not deteriorate analysis.

ADVANTAGES OF CE METHOD

CE method for the determination of sulfur dioxide has a number of advantages compared with other analytical methods typically used for this purpose, such as photometry, titrimetry, etc.

- CE method is not hampered by:
 - colored compounds;
 - different reducing agents like ascorbic acid;
 - different sulfur compounds.
- Additional steps (masking, lightening, etc.) are not required.
- Sample pretreatment time is only 15 minutes.
- Analysis time on “CAPEL®-105M” CE system is less than 3 minutes.

EQUIPMENT AND REAGENTS

“CAPEL®-105M” capillary electrophoresis system with high-voltage negative polarity is used in all measurements. Instrument control, data acquisition and data processing 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

Buffer: chromate, with DEA and CTA-OH

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

Sample injection: 300 mbar*s

Voltage: -25 kV

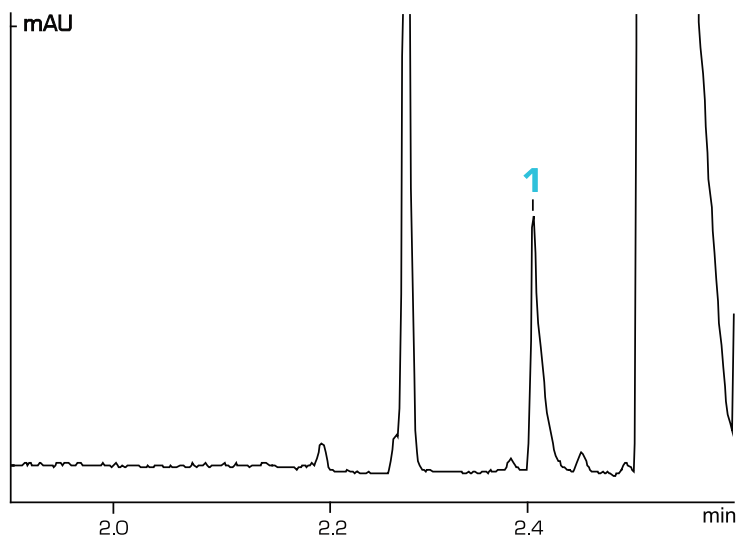
Temperature: +20 °C

Detection: 374 nm

Sample: pretreated dry white wine

Found, mg/L:

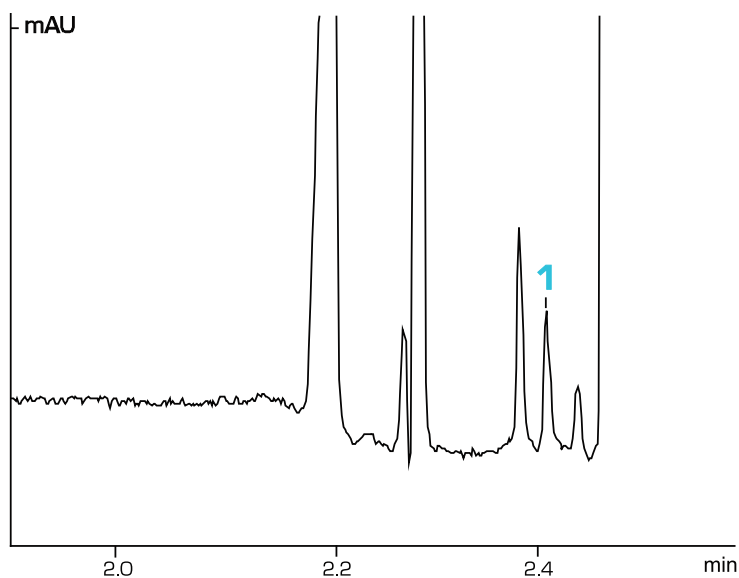
1 – total sulfur dioxide (93)



Sample: pretreated dark beer

Found, mg/L:

1 – total sulfur dioxide (7.0)



The contents on this paper are subject to change without notice. Please, contact manufacturer LUMEX to get more detailed information.

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