



Determination of **carboxylic acids** in waters and reagents

INTRODUCTION

The use of chemicals in the oil and gas industry helps preventing and solving production issues while enhancing operational efficiency. Key reagents, such as inhibitors of corrosion (including biocorrosion) and salt deposition, are essential for maintaining the integrity of equipment and infrastructure. Laboratory monitoring of the chemical composition of the reagents, including complex ones, along with the control of waste, field, and formation waters, makes it possible to create effective treatment programs for oil and gas extraction.

The method is used to determine the mass concentration of carboxylic acids (oxalic, formic, tartaric, malic, citric, glycolic, succinic, lactic, acetic, propionic, butyric and isobutyric (in total), isovaleric, valeric, caproic, enanthic) **in process (technological), formation, waste waters and reagents** by capillary electrophoresis.



MEASUREMENT METHOD

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

EQUIPMENT AND REAGENTS

The Capel capillary electrophoresis system is used in measurements. Data acquisition, collection, processing, and output are performed on a personal computer running the Windows® operating system with the Elforun software installed.

EXAMPLES OF ANALYSES

BGE: electrolyte based on benzoic acid with diethanolamine, CTAB

Capillary: $L_{tot} = 60$ cm, ID = 75 μ m

Sample:

A: model mix

B: formation water

Found: mg/L

1 – oxalic acid

2 – formic acid (2)

3 – tartaric acid

4 – malic acid

5 – citric acid

6 – glycolic acid (34)

7 – succinic acid

8 – lactic acid

9 – phosphate

10 – acetic acid (390)

11 – propionic acid (58)

12 – butyric + isobutyric acids (18)

13 – isovaleric acid (5)

14 – valeric acid (3)

15 – caproic acid

16 – enanthic acid

