



## DETERMINATION OF BENZENE IN GASOLINE

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## INTRODUCTION

Benzene is formed in gasoline in the process of oil refining and gasoline production. Determination of benzene in gasoline is an important task, because benzene and its products reacting with the products of incomplete combustion of gasoline are highly toxic. Moreover, the presence of benzene increases fouling that eventually may damage the engine. Therefore, regulations impose limit on the content of benzene in gasoline in many countries, and international standards exist to come up to this requirement.

The infrared spectroscopic methods provide monitoring of benzene in gasoline, as benzene has distinct absorption peaks in the IR spectral region. The existing methods ensure determination of the benzene content in the range **0.1 vol.% to 5 vol.%**.

Basing on the obtained results of analysis, one can promptly respond to the deviations of the quality parameters of gasoline during the production process, which ensures high quality of the gasoline and optimize production costs.

## MEASUREMENT METHOD

A sealed liquid cell is filled with the analysed sample and is installed in the cell compartment of an InfraLUM<sup>®</sup> FT-08 FTIR spectrometer. Infrared spectrum of the sample is recorded in a range of 690–440  $\text{cm}^{-1}$ , with resolution of 2  $\text{cm}^{-1}$  and scanning time of 60 s.

ADVANTAGES OF InfraLUM<sup>®</sup> FT-08 SPECTROMETERS

- Easy to operate
- High selectivity
- Spectrum scanning takes just one minute
- No sample pretreatment needed
- Various accessories may be used for analysis

## EQUIPMENT AND REAGENTS FOR ANALYSIS

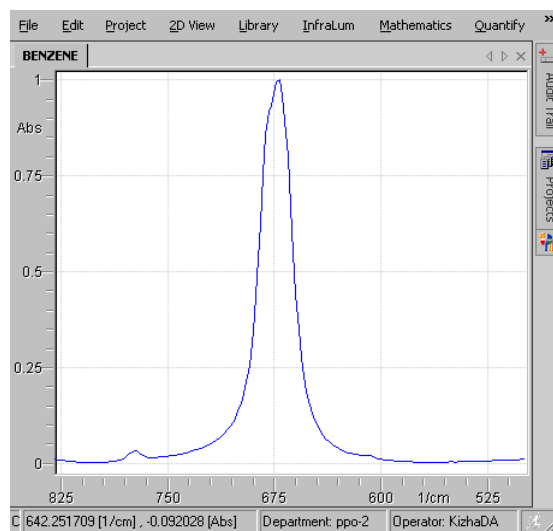
The following equipment and reagents are used for analysis:

- Fourier-Transform Infrared spectrometer InfraLUM<sup>®</sup> FT-08 (with software);
- Sealed liquid cell of fixed pathlength 0.25mm;
- Personal computer.

## EXAMPLE OF ANALYSIS OF A REAL SAMPLE

Screenshot of the region of the absorption spectrum of gasoline with a resolution of 2  $\text{cm}^{-1}$  and scanning time of 60 s.

The characteristic absorption peak of benzene is observed at the 673  $\text{cm}^{-1}$  wavenumber, which provides its identification and determination of its content in gasoline. Concentration is calculated using the software for InfraLUM<sup>®</sup> FT-08 FTIR spectrometer.



The information in this leaflet is supplemental.

To get more specific information on this method, please contact the developer of this application Lumex Ltd.