

# Determination of sulfur in oil and petroleum products according to GOST R EN ISO 20847-2010 and GOST ISO 20847-2014

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The standards are identical to ISO 20847: 2004 Petroleum products - Determination of sulfur content of automotive fuels - Energy-dispersive X-ray fluorescence spectrometry.

ISO 20847 establishes a method for determining the sulfur content in the range from 30 to 500 mg / kg in motor gasolines, including those containing up to 2.7% by weight. oxygen, and in diesel fuels, including those containing up to 5% vol. fatty acid methyl esters (FAME).

## DESCRIPTION OF THE METHOD:

The method is not applicable to leaded gasoline, gasoline with a lead substitute containing 8-20 mg / kg potassium, or to products and raw materials containing lead, silicon, phosphorus, calcium, potassium or halogens in concentrations greater than 0.1 measured sulfur.

No preliminary preparation of samples for analysis is required.

The test sample, placed in a cuvette, is irradiated with the primary radiation of an X-ray tube. The pulse count rate from the S-Ka-X-ray fluorescence radiation is measured. The sulfur content is determined from the calibration curve plotted for the measured sulfur range.

## MEASURING RANGE:

The method establishes the determination of sulfur content in the range from 30 mg / kg to 500 mg / kg, with the following precision parameters:

**Precision** , determined by statistical processing of the results of interlaboratory tests of eight samples of motor gasoline and seven samples of diesel fuel.

### Repeatability $r$ The

discrepancy between two test results obtained by the same operator on the same apparatus under constant operating conditions on the same test material with prolonged operation and the correct performance of the test method can exceed the values indicated below only in one case in twenty:

**for motor gasolines:  $r = 0.0312X + 9$ ;**

**for diesel fuels:  $r = 0.0188X + 8$ ,**

where  $X$  is the average of the compared results, mg / kg.

### Reproducibility $R$ The

discrepancy between two single and independent results obtained by two different operators working in different laboratories, on an identical test material, with long-term operation and the correct performance of the test method, can exceed the values indicated below only in one case in twenty:

**for motor gasolines:  $R = 0.116X + 11$ ;**

**for diesel fuels:  $R = 0.0169X + 12$ ,**

where  $X$  is the average value of the compared results, mg / kg.