

Press Release

Rigaku Publishes Method for Measurement of Manganese in Gasoline

A new application report from Applied Rigaku Technologies, Inc. demonstrates the analysis of manganese (Mn) in gasoline by energy dispersive X-ray fluorescence

Austin, TX— January 26, 2018. [Applied Rigaku Technologies, Inc.](#) today announced the publication of a new empirical method for the measurement of manganese (Mn) in gasoline by energy dispersive X-ray fluorescence ([EDXRF](#)). The application report includes information about sample preparation, calibration and instrument precision and highlights the performance of the [Rigaku NEX QC+](#) high-resolution benchtop EDXRF spectrometer.

Methylcyclopentadienyl manganese tricarbonyl (known as MMT or MCMT) is an anti-knock agent added to motor gasoline and avgas (aviation gasoline) to boost octane rating, replacing tetraethyl lead (TEL) in many regions. In motor gasoline, the manganese level is typically between 50-500 mg/kg, but can be as high as 3000 mg/kg (approximately 3 g/L) in avgas. Reliably characterizing the manganese content of gasoline is needed to ensure optimum engine performance based on the engine's compression ratio and other geometrical and mechanical operating conditions.

For the analysis described in the report, empirical calibration was made using commercially available certified gasoline standards containing a manganese additive. Measurement was performed using the NEX QC+ EDXRF analyzer, engineered to meet industry needs for elemental analysis of petroleum-based fuels.

The results indicate that with stable samples, appropriate sample handling and proper calibration technique, the Rigaku NEX QC+ EDXRF can be used to reliably measure manganese in gasoline and avgas without the need to use an internal standard.



Rigaku NEX QC+ high-resolution benchtop energy dispersive X-ray fluorescence spectrometer

A copy of this report may be requested at:
https://www.rigakuedxrf.com/app-notes.php?id=1760_AppNote

About Rigaku

Since its inception in Japan in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Rigaku and its subsidiaries form a global group focused on life sciences and general purpose analytical instrumentation. With hundreds of major innovations to its credit, Rigaku and its subsidiary companies are world leaders in the fields of small molecule and protein crystallography, X-ray spectrometry and diffraction, X-ray optics, as well as semiconductor metrology. Rigaku employs over 1,400 people globally and its products are in use in more than 90 countries – supporting research, development, and production control and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial community.

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