Application Note EDXRF1438

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EDXRF1438 - Analysis of Lead in Gasoline

Scope

This application note details performance for the measurement of lead (Pb) in gasoline as per ASTM D5059 using NEX QC.

ASTM D5059-14

Standard test methods for lead in gasoline by X-ray spectroscopy

1. Scope

1.1 These test methods cover the determination of the total lead content of a gasoline within the following concentration ranges:

0.010 to 5.0 g Pb/US gal
0.012 to 6.0 g Pb/UK gal
0.0026 to 1.32 g Pb/L

1.1.1 Test Methods A and B cover the range of 0.10 to 5.0 g Pb/US gal. Test Method C covers the range of 0.010 to 0.50 g Pb/US gal.

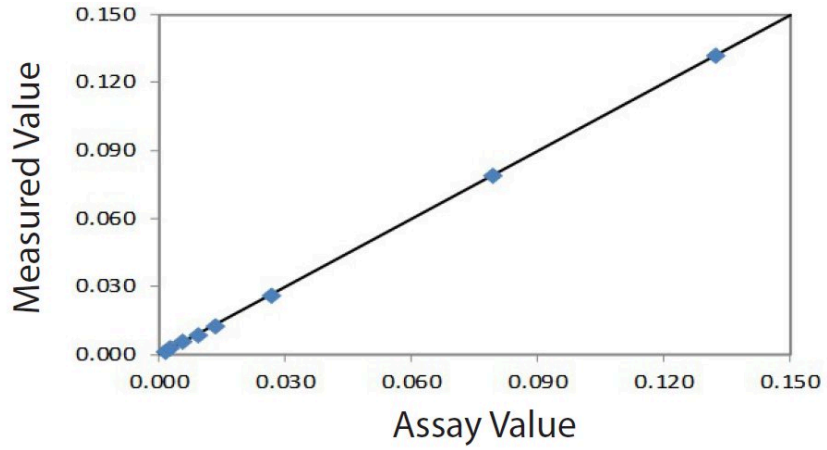
Conversion factor

1.0000 g/L = 3.7854 g/US gal = 4.5461 g/UK gal

Calibration

Empirical calibration was built to cover 0.0013 – 0.1321 g/L to satisfy D5059 Part C using a suite of 8 commercially available certified gasoline calibration standards.

Element: Pb **Units: g/L**		
Sample I.D.	**Assay value**	**Measured value**
1	0.0013	0.0016
2	0.0026	0.0030
3	0.0053	0.0057
4	0.0090	0.0090
5	0.0132	0.0126
6	0.0264	0.0264
7	0.0793	0.0793
8	0.1321	0.1321



Correlation Plot Pb

Precision

Instrument repeatability (precision) is determined by ten repeat analyses of each sample in static position. Actual error due to precision may be somewhat lower, as slight evaporation effects are observed during repeat analyses.

Element: Pb **Units: g/L**

Sample I.D.	Standard value	Average value	Std. dev	% Relative
1	0.0013	0.0014	0.0001	9.1
5	0.0132	0.0131	0.0002	1.5
8	0.1321	0.1328	0.0005	0.4

Conclusion

The results shown here indicate the Rigaku NEX QC EDXRF analyzer can be used to satisfy ASTM D5059-14 Part C. Given higher level calibration ranges, parts A and B can also be met.

Related products

NEX QC Series

Combines quality, affordability, and performance for a wide range of applications