Application Note EDXRF1442

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EDXRF1442 - 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.

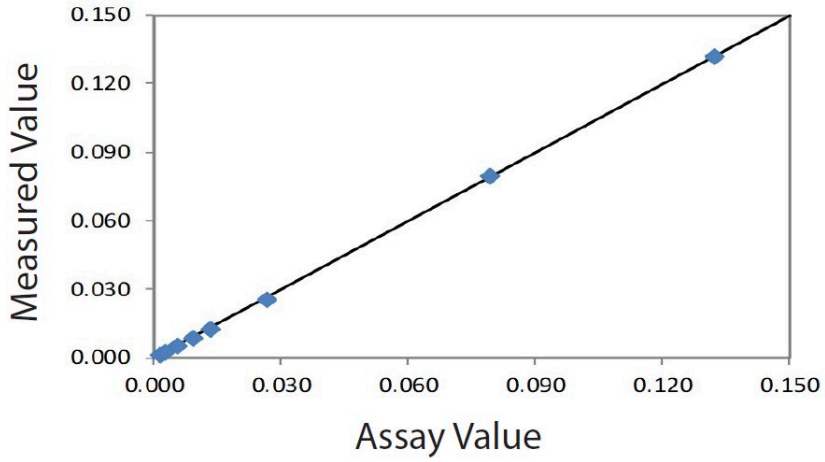
Conversion factor

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**		
Standard I.D.	**Assay value**	**Measured value**
1	0.0013	0.0014
2	0.0026	0.0027
3	0.0053	0.0052
4	0.0090	0.0088
5	0.0132	0.0126
6	0.0264	0.0257
7	0.0793	0.0799
8	0.1321	0.1319



Correlation plot Pb

Precision

Instrument repeatability (precision) is determined by ten repeat analyses of each sample in a 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	0.0129	0.0002	1.5
8	0.1321	0.1329	0.0007	0.5

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