

Elemental Microanalysis Limited

Okehampton Business Park
Exeter Road
Okehampton
Devon EX20 1UB
Telephone 01837 54446/7
Fax 01837 54544

**Certificate of Analysis
Part No. B2318
Green Petroleum Coke Standard**

Certificate Number 747414
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All analysis reported on a dried basis value

Methods used:

Mean Weight Percent Sulphur	= 3.51 +/-0.09	ASTM D4239
Mean Weight Percent Ash	= 3.20 +/-0.11	ASTM D3174, D4422
Mean Weight Percent Vol. Mat	= 6.83 +/-0.96	ASTM D7582, D3175
BTU/Pound	= 14.196 +/- 150	ASTM D5865
Fixed Carbon(CALCULATED)	= (89.98)	ASTM D3172
Mean Weight Percent Carbon	= 88.78 +/-1.07	ASTM D5373
Mean Weight Percent Hydrogen	= 2.05 +/-0.61	ASTM D5373
Mean Weight Percent Nitrogen	= 1.18 +/-0.22	ASTM D5373
Parts per million Nickel	= 202 +/- 38	ASTM D5056, D5600, D6376
Parts per million Iron	= 6799 +/- 842	ASTM D5056, D5600, D6376
Parts per million Vanadium	= 542 +/-42	ASTM D5056, D5600, D6376
Parts per million Calcium	= 1003 +/- 97	ASTM D5056, D5600, D6376
Parts per million Silicon	= 6469 +/-337	ASTM D5056, D5600, D6376

Numbers in brackets are for reference only.

Portions of this Certified Reference Material are traced to NIST SRM 2718

The precision value represents the expanded degree of uncertainty based on errors from analytical assay at a 95% confidence level ($k=2$). Normal ASTM procedures should be employed when using this standard. This includes using the *reproducibility* and *repeatability* factors of the method for establishing analytical uncertainty.

The samples used for round robin testing were selected in accordance with ARI 014. The above values relate only to the material used to produce this standard. The analytical samples are recommended to be dried per the test method used. This bottle contains 50g, fine -60 mesh (250 micron) petroleum coke powder. Kept sealed this product has an indefinite shelf life. Once opened this certificate is valid for 2 years.

Remedies for any claimed defect in this product will be limited to product replacement or refund of the purchase price. In no event shall Elemental Microanalysis Ltd be liable for incidental or consequential damages.

This is a Certified Reference Material (CRM) and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

Elemental Microanalysis Limited

Certified May 13,2014

This CRM is valid for two years from the date of opening.