Elemental Microanalysis
Okehampton Business Park
Exeter Road
Okehampton
Devon EX20 1UB
Telephone 01837 54446
Fax 01837 54544
Web: www.elementalmicroanalysis.com

Certificate of Analysis
Part No. B2322
Ultimate Coal Standard

Certificate Number 781918

Dried Basis Values

.

Proximate Analysis	ASTM	
% Ash	D3174/D7582	42.89 ± 0.43
% Volatile Matter	D3174/D7582	26.30 ±1.45
% Fixed Carbon (calculated)	D3172	(30.81)
% Sulphur	D4239	2.27 ± 0.06
BTU/lb	D5865	8097 ± 90

Ultimate Analysis	ASTM	
% Carbon	D5373	45.14 ± 0.57
% Hydrogen	D5373	3.39 ± 0.18
% Nitrogen	D5373	0.91 ± 0.16
% Oxygen (calculated)	D3176	(5.40)
MAF/DAF BTU	D3180	14163 ± 140

%Mineral Analysis	ASTM D4326/D6349
Silica	60.54 ± 2.52
Alumina	19.91 ± 1.88
Titania	0.96 ± 0.09
Ferric Oxide	9.44 ± 1.33
Calcium Oxide	0.50 ± 0.08
Magnesium Oxide	1.48 ± 0.23
Potassium Oxide	3.55 ± 0.50
Sodium Oxide	0.57 ± 0.07
Sulphur Trioxide	(0.72 ± 0.27)
Phosphorus Pentoxide	(0.07 ± 0.03)
Strontium Oxide	(0.04 ± 0.01)
Barium Oxide	0.14 ± 0.03
Manganese Dioxide	0.05 ±0.01
Undetermined (calculated)	(2.03)

Sulphur Forms	D2492
% Pyritic	1.40 ± 0.10
% Organic (calculated)	(0.52)
% Sulphate	0.35 ± 0.08

Ash Fusion Temperature	D1857	**Degrees F Reducing**	**Degrees F Oxidising**
Initial Deformation		2231	2443
Softening-		2346	2564
Hemispherical		2443	2643
Fluid/Final		2562	2667

% Chlorine	D4208/D6721	0.0769 ± 0.0065

REFERENCES USED: Sulphur NIST SRM 2683c, NCS FC28011d; BTU – NIST 39j (Benzoic Acid); C/H/N-Phenylalanine, EDTA; Sulphate Sulphur QAR-RM-6; Mineral Analysis - NIST634a, USGS AGV-2; Chlorine SRM2693 **Brackets () indicates reference-only value.**

Notes:

The intended use of this reference standard is for the verification of various tests by the above-mentioned methods. Typical sample size for analytical testing and minimum size is subject to the test method and instrumentation used. The uncertainty values represent the expanded uncertainty (k=2, @ 95% confidence) obtained through analytical testing by the mentioned ASTM methods. Normal test procedures should be employed when using this standard; this includes using the reproducibility and repeatability factors of the method for establishing method expanded analytical uncertainty, if needed.

The material used in production of this standard was prepared and sampled in accordance with ARI 041. The samples for round robin testing were selected in accordance with ARI 031. The above values relate only to the material used to produce this standard. The analytical samples were dried or corrected for moisture as per the test method you are using. This bottle contains 50g, fine coal powder (-60 mesh). While unable to determine a definite shelf life, this reference should be reviewed every 20 years from the date of certification. Once opened, this certificate is valid for two years. Keep sealed tight and store under normal laboratory conditions.

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 Reference Material and is traceable to the above-mentioned references. For good laboratory practice it is recommended that all standards be verified prior to use.

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

Certified November 29, 2018.

Elemental Microanalysis Limited