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Certificate of Analysis
Part No. B2324
Ultimate Coal Standard

Certificate Number 782118

Dried Basis Values

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Proximate Analysis	ASTM		**Ultimate Analysis**	ASTM	
% Ash	D3174/D7582	23.64 +/-0.24	% Carbon	D5373	55.70 +/-1.27
% Volatile Matter	D3175/D7582	32.24 +/-1.40	% Hydrogen	D5373	4.10 +/-0.32
% Fixed Carbon (calculated)	D3172	44.12	% Nitrogen	D5373	(1.28 +/-0.49)
% Sulphur	D4239	5.39 +/-0.16	% Oxygen (calculated)	D3176	(9.89)
BTU	D5865	10031 +/-250	MAF/DAF BTU	D3180	13163 +/-355

%Mineral Analysis	ASTM D4326/D6349	**Sulphur Forms**	D2492	
Silica	45.92 +/-2.63	% Pyritic		1.83 +/- 0.30
Alumina	20.77 +/-1.08	% Organic (calculated)		(1.95)
Titania	1.04 +/-0.12	% Sulphate		1.61 +/- 0.21
Ferric Oxide	(23.16 +/-4.37)			
Calcium Oxide	1.28 +/-0.08	**Ash Fusion Temperature**		**Degrees F Reducing**	**Degrees F Oxidising**
Magnesium Oxide	0.79 +/-0.04		D1857		
Potassium Oxide	2.68 +/-0.24	Initial Deformation		2030	2515
Sodium Oxide	(0.21 +/- 0.14)	Softening-		2190	2548
Sulphur Trioxide	1.63 +/-0.24	Hemispherical		2281	2569
Phosphorus Pentoxide	0.12 +/-0.02	Fluid/Final		2385	2602
Strontium Oxide	(0.03)				
Barium Oxide	0.18 +/-0.04	% Chlorine	D4208/D6721		(0.0282)
Manganese Dioxide	(0.02)				
Undetermined (calculated)	(2.17)				

REFERENCES USED: Sulphur NIST SRM 2685b, NCS FC28143; BTU – NIST 39j; C/H/N- CRM-6; CRM-9; Sulphate Sulphur QAR-RM-1; Pyritic Sulphur – SRM1635a; Chlorine – SRM1635a, SRM2685c

Brackets () indicates reference-only value.

Notes:

The intended use of this reference standard is for the verification of various tests by the appropriate ASTM 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 appropriate 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 Certified Reference Material (Working Standard) and is traceable (Sulphur) to the above mentioned NMI 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 March 19, 2018.

Elemental Microanalysis Limited