

**Certificate of Analysis
Part No. B2321
Ultimate Coal Standard**

Certificate Number 776216
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Dried Basis Values

Proximate Analysis			Ultimate Analysis		
	ASTM			ASTM	
% Ash	D3174/D7582	7.23 +/-0.11	% Carbon	D5373	80.96 +/-0.52
% Volatile Matter	D3174/D7582	31.33 +/-0.63	% Hydrogen	D5373	4.99 +/-0.08
% Fixed Carbon(calculated)	D3172	(61.44)	% Nitrogen	D5373	1.62 +/-0.06
% Sulphur	D4239	0.93 +/-0.02	% Oxygen (calculated)	D3176	(4.27)
BTU	D5865	14392 +/-79	MAF/DAF BTU	D3180	15513 +/-88
%Mineral Analysis			Sulphur Forms		
	ASTM	D4326/D6349		D2492	
Silica		49.97 +/-1.86	% Pyritic		0.21+/-0.02
Alumina		27.78 +/-1.23	% Organic (calculated)		(0.01)
Titania		1.46 +/-0.12	% Sulphate		0.71+/-0.06
Ferric Oxide		10.13 +/-1.09	Ash Fusion Temperature		
Calcium Oxide		2.52 +/-0.27		Degrees F	Degrees F
Magnesium Oxide		1.14 +/-0.09		Reducing	Oxidising
Potassium Oxide		2.41 +/-0.39	Initial Deformation	D1857	2522
Sodium Oxide		0.50 +/- 0.10	Softening-		2592
Sulphur Trioxide		2.29 +/-0.26	Hemispherical		2643
Phosphorus Pentoxide		0.23 +/-0.04	Fluid/Final		2699
Strontium Oxide		0.13 +/-0.02	% Chlorine	D4208/D6721	(0.06)
Barium Oxide		0.15 +/-0.03			
Manganese Oxide		(0.04)			
Undetermined (calculated)		(1.25)			

REFERENCES USED: Sulphur - NIST SRM 2692c, NCS FC28004b, BTU - Benzoic Acid.
Brackets () indicates reference-only value.

Notes:

The material used in production of this standard was prepared and sampled in accordance with ARI 041 and ISO Guide 34. The uncertainty values represent the expanded uncertainty (k=2, two sigma, 95% confidence) obtained through analytical testing by the mentioned ASTM methods, and may not reflect your testing capabilities. 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.

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). Kept sealed this product has an indefinite shelf life. 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 September 13, 2016

Elemental Microanalysis Limited