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Certificate of Analysis
Part No. B2321
Ultimate Coal Standard

RM Doc Number: 776723

Analytical Results

Dried Basis Values

Proximate Analysis		n=	k=	ASTM	Ultimate Analysis		n=	k=	ASTM
% Ash	9.31 ± 0.63	20	2.1	D3174/D7582	% Carbon	72.4 ± 0.69	6	2.6	D5373
% Volatile Matter	35.5 ± 1.3	21	2.1	D3175/D7582	% Hydrogen	4.52 ± 0.75	6	2.6	D5373
% Fixed Carbon (calculated)	(55.2)	--	--	D3172	% Nitrogen	1.42 ± 0.05	6	2.6	D5373
% Sulfur	1.11 ± 0.05	40	2.0	D4239	% Oxygen (calculated)	(11.24)	--	--	D3176
Btu/lb	12723 ± 140	8	2.4	D5865					

Mineral Analysis		n=	k=	ASTM	Sulfur forms		ASTM
% Silica	47.37 ± 2.39	8	2.4	D4326/D6349	% Pyritic	(0.14)	D2492
% Alumina	24.79 ± 2.23	8	2.4	D4326/D6349	% Organic (calculated)	(0.91)	D2492
% Titania	1.11 ± 0.09	8	2.4	D4326/D6349	% Sulfate	(0.06)	D2492
% Ferric Oxide	12.45 ± 1.01	8	2.4	D4326/D6349			
% Calcium Oxide	4.42 ± 0.29	8	2.4	D4326/D6349	Ash Fusion Temperature	Degrees F Reducing	Degrees F Oxidizing
% Magnesium Oxide	1.36 ± 0.13	8	2.4	D4326/D6349	ASTM D1857		
% Potassium Oxide	1.44 ± 0.30	8	2.4	D4326/D6349	Initial deformation	(2183)	(2468)
% Sodium Oxide	0.64 ± 0.17	8	2.4	D4326/D6349	Softening	(2370)	(2559)
% Sulfur Trioxide	(4.89)	--	--	D4326/D6349	Hemispherical	(2422)	(2571)
% Phosphorus Pentoxide	0.77 ± 0.16	8	2.4	D4326/D6349	Fluid/Final	(2505)	(2608)
% Strontium Oxide	(0.15)	--	--	D4326/D6349			
% Barium Oxide	0.18 ± 0.02	8	2.4	D4326/D6349	% Chlorine D4208/D6721	(0.0185)	
% Manganese Oxide	(0.11)	--	--	D4326/D6349	% Fluorine D3761/D5987	(0.0065)	

REFERENCES USED: Sulfur - NIST SRM 2692c, 1632d, NCS FC28004f, FC28010e; BTU - NIST 39j(Benzoic Acid); Mineral Analysis – NIST 1632e, 2689, 1634a; Chlorine – SRM 1635a; Fluorine – SRM 1635a. () Indicates reference or information only value.

**The analytical results above are provided by an accredited reference material manufacturer with a current certification in ISO 17025 and 17034.*

The intended use of this Reference Material (RM) 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 Period of Validity for this RM is 2 years after opening and should be reviewed 20 years after the date below.

This bottle contains 50g of fine coal powder to be used per the test method you follow. Keep sealed tightly and store under normal laboratory conditions. The analytical samples should be dried or corrected for moisture as per the test method you are using.

Refer to your test methods and or manufacturer manual for expanded uncertainties, repeatability/reproducibility factors.

For good laboratory practice, we recommend that all reference materials be verified as fit for purpose prior to use. 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.

Certified on the 10th of October 2023.

Elemental Microanalysis Ltd