

# Alpha Resources, Inc. Certificate Of Analysis

AR-2775  
**ULTIMATE COAL STANDARD**  
**LOT # 775309                      LID # 775309**  
**DRIED BASIS VALUES**

Proximate Analysis	ASTM	Ultimate Analysis	ASTM
% Ash.....	6.23 +/- 0.2    D3174/D5142	% Carbon.....	69.32 +/-0.5    D5373
% Volatile Matter.....	43.25 +/-0.8    D3175/D5142	% Hydrogen.....	4.51 +/-0.1    D5373
% Fixed Carbon (calculated)	50.52            D3172	% Nitrogen.....	0.87 +/-0.1    D5373
% Sulfur.....	0.29 +/-0.02    D4239B	% Oxygen (calculated)...	18.78            D5373
Btu.....	11749            D5865	MAF/DAF BTU	12530            D5865
Mineral Analysis	ASTM	Sulfur Forms	ASTM
Silica.....	34.1 +/-1.1    D4326/D3682	% Pyritic.....	0.02            D2492
Alumina.....	17.00 +/-0.63    D4326/D3682	% Organic (calculated)...	0.26            D2492
Titania.....	1.35 +/-0.04    D4326/D3682	% Sulfate.....	0.01            D2492
Ferric Oxide.....	5.26 +/-0.13    D4326/D3682	 	
Calcium Oxide.....	22.24 +/-0.79    D4326/D3682	Ash Fusion	Degrees F    ASTM
Magnesium Oxide.....	5.19 +/-0.23    D4326/D3682	Temperature	
Potassium Oxide.....	0.42 +/-0.06    D4326/D3682	REDUCING	
Sodium Oxide.....	1.66 +/-0.15    D4326/D3682	Initial deformation...	2114    D1857
Sulfur Trioxide.....	10.85 +/-2.0    D4326/D3682	Softening.....	2125    D1857
Phosphorus Pentoxide.....	0.88 +/-0.28    D4326/D3682	Hemispherical.....	2137    D1857
Strontium Oxide.....	0.28 +/-0.03    D4326/D3682	Fluid/Final.....	2160    D1857
Barium Oxide.....	0.69 +/- 0.04    D4326/D3682	% Chlorine.....	<0.01
Manganese Oxide...	0.01            D4326/D3682	Ash type.....	lignite
Undetermined (calculated)	0.08		

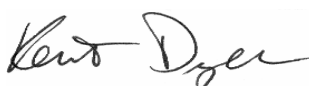
The material used in production of this standard was sampled in accordance with ARI 031. The precision values represent the standard deviation (k=1) obtained through analytical testing, and are given for reference only. Normal ASTM procedures should be employed when using this standard, this includes using the *reproducibility* and *repeatability* factors of the method for establishing analytical uncertainty. When necessary, professional judgment is applied toward consideration of data and statistical information. The statistical analysis and the overall direction and coordination of the analytical measurements leading to certification were performed by K.E. Dyer at Alpha Resources.

The samples 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 were dried under a nitrogen atmosphere for a minimum of 70 minutes at 107° C +/- 3° C until a steady mass is achieved

Remedies for any claimed defect in this product will be limited to product replacement or refund of the purchase price. In no event shall Alpha Resources be liable for incidental or consequential damages. This is a Certified Reference Material (CRM). For good laboratory practice it is recommended that all standards be verified prior to use.

**EXPIRATION DATE**  
**THIS CRM IS VALID FOR TWO YEARS FROM THE DATE OF OPENING**

CERTIFIED June 2, 2009



P.O. Box 199 3090 Johnson Road Stevensville, MI 49127 USA Phone (269) 465-5559 Fax (269) 465-3629

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