

# Alpha Resources, Inc. Certificate Of Analysis

**AR2778**  
**ULTIMATE COAL STANDARD**  
**LOT # ANTB                      LID ID ANTB**  
**DRIED BASIS VALUES**

**Proximate Analysis**

% Ash.....	10.76
% Volatile Matter.....	6.31
% Fixed Carbon.....	82.93
% Sulfur.....	0.63
Btu.....	13,191

**Ultimate Analysis**

% Carbon.....	83.44
% Hydrogen.....	2.11
% Nitrogen.....	0.92
% Sulfur.....	0.63
% Chlorine.....	0.03
% Ash.....	10.76

**Mineral Analysis**

Silica.....	51.24
Alumina.....	32.06
Titania.....	2.09
Ferric Oxide.....	4.78
Calcium Oxide.....	2.17
Magnesium Oxide.....	1.04
Potassium Oxide.....	2.00
Sodium Oxide.....	0.84
Sulfur Trioxide.....	1.77
Phosphorus Pentoxide.....	0.68
Strontium Oxide.....	0.19
Barium Oxide.....	0.25
Manganese Oxide.....	0.00
Undetermined.....	0.94

**Sulfur Forms**

% Pyritic.....	0.06
% Organic.....	0.57
% Sulfate.....	0.00
% Total.....	0.63

**Ash Fusion Temperature**

Initial Deformation Red.....	2700
Initial Deformation Oxd.....	2700
Softening-Red H=W.....	2700
Softening-Oxd H=W.....	2700
Softening-Red H=1/2w.....	2700
Softening-Oxd H=1/2w.....	2700
Fluid-Reducing.....	2700
Fluid-Oxidizing.....	2700
Temperature In Degrees F	

The Following ASTM Procedures Were Employed In The Analysis Of All Samples:

Preparation.....	ASTM D 2013	Ash Analysis.....	ASTM D 3682
Carbon & Hydrogen.....	ASTM D 3178	Chlorine.....	ASTM D 2361
Volatile Matter.....	ASTM D 3175	Fusibilities.....	ASTM D 1857
Sulfur.....	ASTM D 3177	BTU.....	ASTM D 2015
Nitrogen.....	ASTM D 3179	Sulfur Forms.....	ASTM D 2492
Ash.....	ASTM D 3174		

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) and should be verified, prior to use, against a primary standard material provided by a governing agency such as N.I.S.T., when available.

**EXPIRATION DATE**  
**THIS CRM IS VALID FOR TWO YEARS FROM THE DATE OF PURCHASE WHICH**  
**APPEARS ON THE BOTTLE**

