

# Alpha Resources, Inc.

## Certificate Of Analysis

### Coal and Coke Standards

Part #	Lot #	Hg	S.D.	Cl	S.D.	% S	S.D.	% Ash	S.D.
AR-3701	701399JRC100	0.09	+/-0.02	1562	+/-134	1.04	+/-0.03	7.22	+/-0.16
AR-3702	702399JRC75	0.10	+/-0.01	1713	+/-213	0.77	+/-0.04	6.45	+/-0.13
AR-3703	703399WAL99	0.12	+/-0.02	165	+/-35	0.45	+/-0.02	7.64	+/-0.69
AR-3704	704399LIG94	0.13	+/-0.01	107	+/-50	1.17	+/-0.02	10.31	+/-0.23
AR-3705	705399BLK5	0.19	+/-0.02	239	+/-61	4.71	+/-0.09	11.80	+/-0.89

### Coal and Coke Standards – Sulfur Only

Part #	Lot #	Mean Weight % Sulfur	Standard Deviation
AR-1700	7001000	0.29	+/- 0.04
AR-1701	701400	0.46	+/- 0.03
AR-1702	702700	0.62	+/- 0.02
AR-1703	7031099	0.82	+/- 0.03
AR-1704	704999	1.04	+/- 0.03
AR-1705	705898	1.52	+/- 0.03
AR-1706	706897	2.37	+/- 0.03
AR-1707	707696	2.56	+/- 0.05
AR-1708	708895	3.00	+/- 0.04
AR-1709	709895	3.48	+/- 0.06
AR-1710	71099	4.84	+/- 0.14
AR-1711	92I	5.66	+/- 0.06
AR-1712	712298	6.67	+/- 0.29
AR-1713 Lignite	LIG96	1.18	+/- 0.03

### Coke Standards

Part #	Lot #	Mean Weight % Sulfur	Standard Deviation
AR-719	719899	0.67	+/- 0.02
AR-720	20LV97	0.81	+/- 0.02
AR-723	KOP97	0.59	+/- 0.03

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## Petroleum Cokes

Part #	AR-742B	AR-744	AR-745	AR-747	AR-748	AR-756
	Green	Calcined	Green	Green	Calcined	Green
Lot #	CHAL196	UMC744796	745BL	TEX296	NOR92	700
S	0.89	1.91	0.49	3.67	2.75	6.23
S.D.	+/- 0.02		+/- 0.06	+/- 0.14		
Ash	0.09	0.55	0.11	0.28	0.33	0.81
S.D.	+/- 0.02		+/- 0.04	+/- 0.05		
Vol. Mat.	9.67	0.33	5.81	13.06	1.31	5.97
S.D.	+/- 0.18		+/- 0.36	+/- 0.41		
C	93.81	96.10	95.28	90.08		88.32
S.D.	+/- 0.46		+/- 0.65	+/- 0.18		
H	3.76	0.14	1.83	4.56		1.19
S.D.	+/- 0.02		+/- 0.32	+/- 0.06		
N	1.27	1.27	0.67	1.11		1.78
S.D.	+/- 0.13		+/- 0.04	+/- 0.11		
Ni	0.0068	0.0145	0.00494	0.0222	0.0233	0.0297
S.D.	+/- 0.0014		+/- 0.00049	+/- 0.002		
Fe	0.0129	0.1856	0.014828	0.0271	0.0766	0.0653
S.D.	+/- 0.0026		+/- 0.00158	+/- 0.0026		
V	0.0022	0.0167	0.00134	0.0711	0.0289	0.1451
S.D.	+/- 0.0003		+/- 0.00036	+/- 0.0036		
Ca	0.0037	0.0168	0.00305	0.0066	0.0088	0.0041
S.D.	+/- 0.0009		+/- 0.00064	+/- 0.001		
Si	0.0081	0.022	0.00655	0.0067	0.0087	0.067
S.D.	+/- 0.0009		+/- 0.00124	+/- 0.001		

Part #	Description	Lot #	Mean % Sulfur	Standard Deviation
AR-2712	Calcined	7120497	0.43	+/- 0.04
AR-2713	Green	0200	0.45	+/- 0.03
AR-2714	Green	714CHAL	0.906	+/- 0.025
AR-2715	Green	6047-1	1.64	+/- 0.03
AR-2716	Green	TEX0200	2.00	+/- 0.03
AR-2717	Green	7171096	2.42	+/- 0.04
AR-2719	Calcined	UM96	1.88	+/- 0.04
AR-2720	Green	720799I	4.46	+/- 0.06
AR-2721	Green	700	6.15	+/- 0.08
AR-2722	Calcined	NOR92	2.85	+/- 0.04

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## Prox Coal and Coke Standards

Part #	Lot #	% Sulfur	Stand .Devi.	% Ash	Stand Devi.	% Vol. Matter	Stand Devi.	BTU	Stand .Devi.	Fixed Carbon
AR-1720	720400	0.46	0.03	7.40	0.20	42.67	1.04	11688	69	
AR-1721	721797	0.45	0.02	7.33	0.29	44.69	1.46	11491	80	
AR-1722	7221099	0.82	0.03	6.51	0.11	22.47	1.29	14667	70	
AR-1723	723298	1.20	0.03	9.59	0.24	37.54	0.32	13395	121	52.87
AR-1724	724898	1.52	0.02	4.47	0.07	37.52	0.76	13517	57	
AR-1726	726897	2.37	0.03	11.59		35.41		11550		52.95
AR-1727	INT2.5	2.50	0.04	7.55	0.09	36.24	0.23	13466	42	
AR-1728	728895	2.99	0.03	8.98	0.13	43.01	1.14	13260	61	43.17
AR-1729	729895	3.48	0.06	4.97	0.10	42.65	0.49	13876	17.78	52.35
AR-1730	73099	4.84	0.14	8.98	0.13	43.01	1.14	13260	61	43.17
AR-1731	731198	5.51	0.14	45.14	0.45	20.00	0.53	7797.67	88.66	34.86
AR-1732	732298	6.67	0.29	45.88	0.44	20.18	0.25	7494.67	49.50	33.935

## C., H., and N. Coal Standards

Part #	Lot #	Carbon	Standard Deviation	Hydrogen	Standard Deviation	Nitrogen	Standard Deviation
AR-1905	9051000	77.498	0.506	5.153	0.243	1.713	0.056
AR-1906	906SUF	71.59	0.29	4.76	0.08	1.17	0.04
AR-1907	WAL996	69.62		4.56		1.11	
AR-1908	908400	69.96	0.41	4.83	0.28	0.92	0.06

## Coal Standards for Chlorine

Part #	Lot #	% Chlorine	Standard Deviation
AR-1910	910999	0.0511	0.0066
AR-1911	911297	0.108	0.008
AR-1912	912297	0.3905	0.0055

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## The “Ultimates”

	Coke AR- 2771	Coke AR- 2772	Coal AR- 2773	Coal AR- 2775	Coal AR- 2776	Coal AR- 2778	Coal AR- 2780	Coal AR- 2782
Lot #	771100	772Ltv9 7	773wal8 96	80ts	7761097	ANTB	780898	7821097
<b>Proximate Analysis</b>								
% Ash	8.35	6.728	7.27	6.47	11.62	10.76	7.55	13.13
% Vol. Matter	0.36	0.562	42.27	37.14	36.14	6.31	39.74	38.02
% Fix. Carbon	91.29	92.73	50.46	56.39	52.25	82.93	52.57	48.85
BTU	12713	12996	11723	13513	13234	13191	12328	11495
% Sulfur	0.663	0.81	0.32	0.66	0.96	0.63	3.48	4.70
<b>Ultimate Analysis</b>								
% Carbon	89.23	89.42	69.62	77.16	74.84	83.44	69.77	64.95
% Hydrogen	0.13	0.11	4.56	4.89	5.01	2.11	4.84	4.57
% Nitrogen	1.11	1.28	1.11	1.45	1.52	0.92	1.31	1.28
% Chlorine	0.96	0.037	0.01	0.03	0.113	0.03	0.045	0.057
% Ash		6.728	7.27	6.47		10.76		
% Sulfur	0.65	0.81	0.32	0.66		0.63	3.48	
<b>Sulfur Forms</b>								
% Pyritic	0.013	0.01	0.05	0.05	0.21	0.06	0.87	0.94
% Sulfate	0.01	0.00	0.01	0.00	0.01	0.00	1.15	1.59
% Organic	0.64	0.80	0.26	0.61	0.74	0.57	1.56	2.17
% Total	0.663	0.81	0.32	0.66	0.96	0.63	3.48	4.70
<b>Mineral Analysis</b>								
Phosphorous Pentoxide	0.19	0.20	1.71	0.90	0.59	0.68	0.19	0.18
Silica	37.63	49.36	36.71	62.70	54.08	51.24	40.96	44.24
Ferric Acid	39.10	12.97	5.69	2.27	4.41	4.78	37.10	28.38
Alumina	16.62	27.75	16.21	28.21	34.47	32.06	13.29	18.18
Titania	0.82	1.51	1.22	1.48	1.15	2.09	0.82	0.92
Sulfur Trioxide	0.74	1.02	9.24	0.46	0.62	1.77	0.74	1.94
Potassium Oxide	1.22	1.93	0.53	1.41	1.24	2.00	1.22	2.18
Sodium Oxide	0.39	0.91	1.53	0.28	0.29	0.84	0.39	0.23
Calcium Oxide	1.76	1.87	19.91	0.96	1.44	2.17	1.76	2.22
Magnesium Oxide	0.56	0.94	4.95	0.38	0.57	1.04	0.56	0.81
Strontium Oxide	0.02	0.045	0.45	0.30	0.24	0.19	0.02	0.02
Barium Oxide	0.11	0.021	0.71	0.06	0.15	0.25	0.11	0.07
Manganese Oxide	0.025	0.085	0.04	0.00	0.14	0.00	0.03	0.04
Undetermined	0.007	0.21			0.00	0.94	0.00	0.61

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

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Ash Fusion Temperature								
Initial Deformation Reducing	2501		2118	2700		2700	1995	1976
Initial Deformation Oxidizing	2575		2203	2700		2700	2528	2458
Softening Reducing (H=W)	2521		2142	2700		2700	2006	1993
Softening-Oxidizing (H=W)	2632		2217	2700		2700	2544	2475
Softening-Reducing (H=1/2W)	2686		2155	2700		2700	2025	2015
Softening-Oxidizing (H=1/2W)	2656		2239	2700		2700	2554	2500
Fluid- Reducing	2627		2188	2700		2700	2100	2218
Fluid- Oxidizing	2697		2269	2700		2700	2566	2542



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## Mineral Analysis for Coal

Part #	AR-2751	AR-2752A	AR-2753	AR-2754	AR-2755	AR-2756	AR-2758	AR-2760
Lot #	751wa896	F95	7697	1TBD	03	NTB	380	90
Silicon Dioxide	36.71	29.12	54.08	51.41	33.92	51.38	37.99	49.48
Aluminum Dioxide	16.21	14.67	34.47	29.61	14.29	32.11	17.90	27.36
Titanium Dioxide	1.22	0.51	1.15	1.32	0.73	2.09	0.75	1.33
Ferric Oxide	5.69	45.87	4.41	10.31	46.55	4.78	23.54	15.16
Calcium Oxide	19.91	4.50	1.44	1.79	0.54	2.19	8.87	1.07
Magnesium Oxide	4.94	0.54	0.57	0.89	0.53	1.04	0.77	0.77
Potassium Oxide	0.53	1.05	1.24	2.71	1.43	2.02	1.79	2.47
Sodium Oxide	1.53	0.54	0.29	0.48	0.17	0.84	0.66	0.16
Sulfur Trioxide	9.24	2.82	0.62	0.95	0.53	1.77	7.10	0.39
Phosphorus Pentoxide	1.71	0.26	0.59	1.00	0.11	0.68	0.50	0.30
Strontium Oxide	0.45	0.01	0.24	.16	0.01	0.19	0.05	0.07
Barium Oxide	0.71	0.09	0.15	0.08	0.00	0.25	0.04	0.00
Manganese Oxide	0.04	0.02	0.14	0.00	0.29	0.00	0.04	0.11
Undetermined	1.12	0.00	0.00	0.00	0.90	0.66	0.00	1.33
Ash Content of Whole Coal	7.27	18.61	11.62	8.10	8.21	10.74	12.20	15.00