Global Coal Sales Group, LLC.
Signal Peak Energy Mine

Typical Coal Quality Analysis

Proximate Analysis	As Rec'd	Dry
Moisture %	19.66	---
Ash %	5.75	7.15
Volatile Matter %	29.55	37.12
Fixed Carbon %*	44.63	55.21
Sulfur %	0.42	0.52
Btu/Lbs	10,184	12,675
kcal/kg	5,661	7,046
kcal/kg (Net)	5,345	6,796
MAF Btu/Lbs	---	13,652

Ash Mineral Analysis %	Ignited	SO_3 free
SiO_2	44.66	49.45
Al_2O_3	27.82	30.81
TiO_2	0.97	1.08
Fe_2O_3	2.63	2.91
CaO	8.30	9.20
MgO	2.81	3.11
K_2O	0.53	0.58
Na_2O	1.34	1.48
P_2O_5	0.19	0.21
SrO	0.73	0.81
BaO	0.27	0.30
Mn_3O_4	0.07	0.08
SO_3	9.69	---
Undetermined	0	0

Sulfur Forms %	As Rec'd	Dry
Pyritic Sulfur	0.06	0.07
Organic Sulfur	0.37	0.46
Sulfate Sulfur	<0.01	---

Combustion Products	Lbs/M Btu
Ash	5.64
Sulfur	0.41
SO_2	0.83
H_2O**	63.68
Na_2O	0.08
CO_2	209.35

Updated as of 2016-05-10

Ultimate Analysis	As Rec'd	Dry
Moisture %	19.66	---
Carbon %	58.17	72.42
Hydrogen %	3.93	4.90
Nitrogen %	1.03	1.28
Sulfur %	0.42	0.52
Ash %	5.75	7.15
Oxygen %*	11.05	13.73

Fusion Temperature (°F)	Reducing	Oxidizing
Initial Deformation	2,386	2,446
Softening (H=W)	2,445	2,482
Hemispherical (H=1/2W)	2,479	2,525
Fluid	2,583	2,577

Fusion Temperature (°C)	Reducing	Oxidizing
Initial Deformation	1,308	1,341
Softening (H=W)	1,341	1,361
Hemispherical (H=1/2W)	1,359	1,385
Fluid	1,417	1,414

Trace Elements	Dry µg /g
Boron	52.81
Arsenic	3.31
Chlorine	35.24
Fluorine	45.67
Mercury	0.04
Nickel	2.27
Vanadium	11.53
Selenium	< 1
Cadmium	0
Lead	0
Zinc	0

Miscellaneous	
Hardgrove Grindability (HGI)	47.65
Fixed Carbon:Volatile ratio*	1.51
Slagging Index	0.10

** Calculated based on difference*

*** Assuming Empirical Formula of Coal as* $C_{137}H_{97}O_9NS$