

<u>Proximate Analysis</u>	<u>As Received</u>	<u>Dry</u>	<u>Gieseler Plasticity</u>	
Moisture	6.64		Max. Fluidity, ddpm	268
Ash	8.44	9.04	Max. Fluidity Temp. C	477
Volatile Matter	17.62	18.87	Softening Temp. C	429
Fixed Carbon	67.30	72.09	Solidification Temp. C	502
Btu	13,347	14,296	Plastic Range	73
Sulfur	1.12	1.20		
MAFBtu		15,716		
Lb. SO ₂ /MMBtu		1.68		
<u>Ultimate Analysis Dry</u>			<u>Arnu/ASTM Dilatation</u>	
Carbon		80.42	Max. Contraction (%)	-26
Hydrogen		4.45	Max. Dilatation (%)	+85
Nitrogen		1.47	T1 - Initial Softening Temp. C	408
Sulfur		1.20	T2 - Initial Dilatation Temp. C	436
Ash		9.04	T3 - Max. Dilatation Temp. C	494
Oxygen		3.42	ASTM Dil., % (2.5-g, Air Dry)	+83
<u>Elements in Ash (%)</u>			<u>Free Swelling Index</u>	9
Silicon Dioxide - SiO ₂		45.88	<u>Petrographic Analysis</u>	
Aluminum Oxide - Al ₂ O ₃		30.95	Maceral Composition, Vol %	
Iron Oxide - Fe ₂ O ₃		8.89	<u>Reactives</u>	V-Type
Titanium Oxide - TiO ₂		1.32		12
Calcium Oxide - CaO		2.27		13
Magnesium Oxide - MgO		0.57		14
Sodium Oxide - Na ₂ O		0.11		15
Potassium Oxide - K ₂ O		1.70		16
Phosphorous Pentoxide - P ₂ O ₅		0.53		17
Sulfur Trioxide - SO ₃		1.23		18
Manganese Dioxide - MnO ₂		0.01		
Barium Oxide - BaO		0.06	Vitrinite	79.3
Strontium Oxide - SrO		0.13	Exinite	0.1
<u>Sulfur Forms</u>			Resinite	0
Sulfate Sulfur		0.01	Semifusinite	1.3
Pyritic Sulfur		0.55	Total Reactives	80.7
Organic Sulfur		0.64	<u>Inerts</u>	
<u>Equilibrium Moisture</u>		1.56	Semifusinite	5.1
<u>Hardgrove Grindability Index</u>		97.00	Micrinite	7.6
<u>Chlorine (mg/kg, dry)</u>		1,065	Fusinite	1.3
<u>Ash Fusion</u>			Mineral Matter (Calc.)	5.3
Reducing Atmosphere			Total Inerts	19.3
Initial Deformation Temp. °F		2800 +	Mean Max Reflectance, %	1.55
Softening Temp. °F		2800 +	Standard Deviation	0.0679
Hemispherical Temp °F		2800 +	Comp. Balance Index	2.17
Fluid Temp. °F		2800 +	Rank/Strength Index	7.11
Oxidizing Atmosphere			Calculated Stability	61.5
Initial Deformation Temp. °F		2800 +	Sole Oven, (% Vol Chg. @ 52/2)	+ 2.6
Softening Temp. °F		2800 +		
Hemispherical Temp °F		2800 +		
Fluid Temp. °F		2800 +		

All analyses are subject to revision due to additional coring, conditions specified in the coal supply agreement, actual operating conditions at the time of mining, current mines producing, type of preparation at time of mining, federal and state regulations. Analysis based on current mine production samples. Analysis intended for informational purposes only and is based on PBS Coals, Inc. standard Quecreek Brand coal with a 9.25% dry ash and a 1.20% dry sulfur.