0037

Sunnyside Mines Inc.

INTERNATIONAL ANTHRACITE CORP.

INTERNATIONAL ANTHRACITE COAL QUALITY SPECIFICATIONS

	As Received	Dry Basis	Dry Ash Free
Gross Heating Value			
Btu/lb	12,488	13,172	13,883
Kcal/kg	6,938	7,318	7,710
Total Moisture	5.19%	-	-
Volatile Matter	6.78%	7.15%	8.29%
Ash	13.06%	13.77%	
Fixed Carbon	74.96%	79.08%	
Sulfur	0.59%	0.62%	

Ash Fusion Temperatures (Reducing Atmosphere)	
Initial Deformation	2500°F
Softening (H=W)	2560°F
Hemispheric (H=1/2W)	2600°F
Fluid	2660°F

Hardgrove Grindability Index 74

Ultimate Analysis

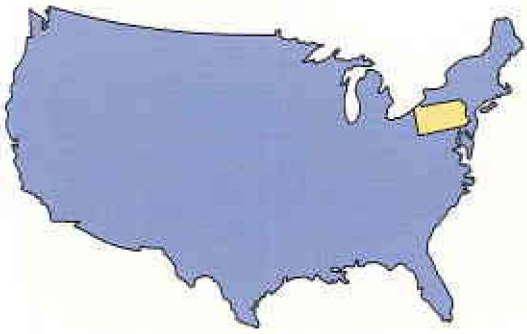
Carbon	80.57%
Hydrogen	2.80%
Nitrogen	1.01%
Chlorine	0.01%
Sulfur	0.62%
Ash	13.77%
O (by difference)	1.22%

Ash composition (Ignited Basis)

SiO_2	53.09%
Al_2O_3	25.16%
TiO_2	1.74%
Fe_2O_3	12.95%
CaO	1.69%
MgO	1.40%
K_2O	1.75%
Na_2O	0.25%
SO_3	1.26%
P_2O_5	0.28%
Undetermined	0.43%

International Anthracite Corporation (IAC)

Valley View, Pennsylvania



IAC, a Delaware corporation, mines and brokers anthracite in Pennsylvania. The company currently operates the largest underground anthracite mine in the United States and sells anthracite to two major utilities, UGI Corp. and Pennsylvania Power and Light while exporting anthracite to Korea for use in heating briquettes.

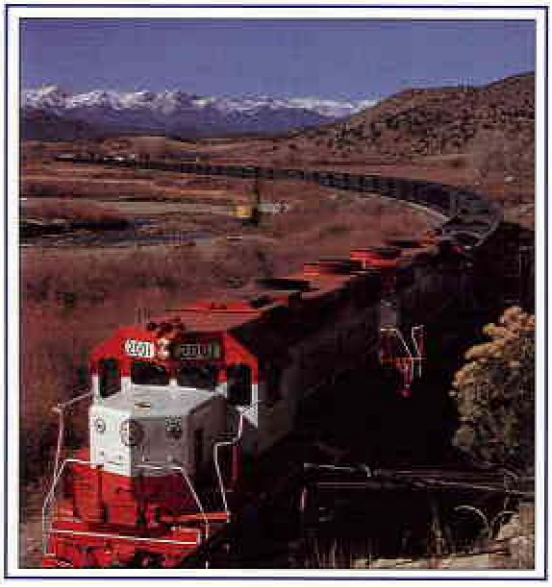
COLORADO COAL AND COKE

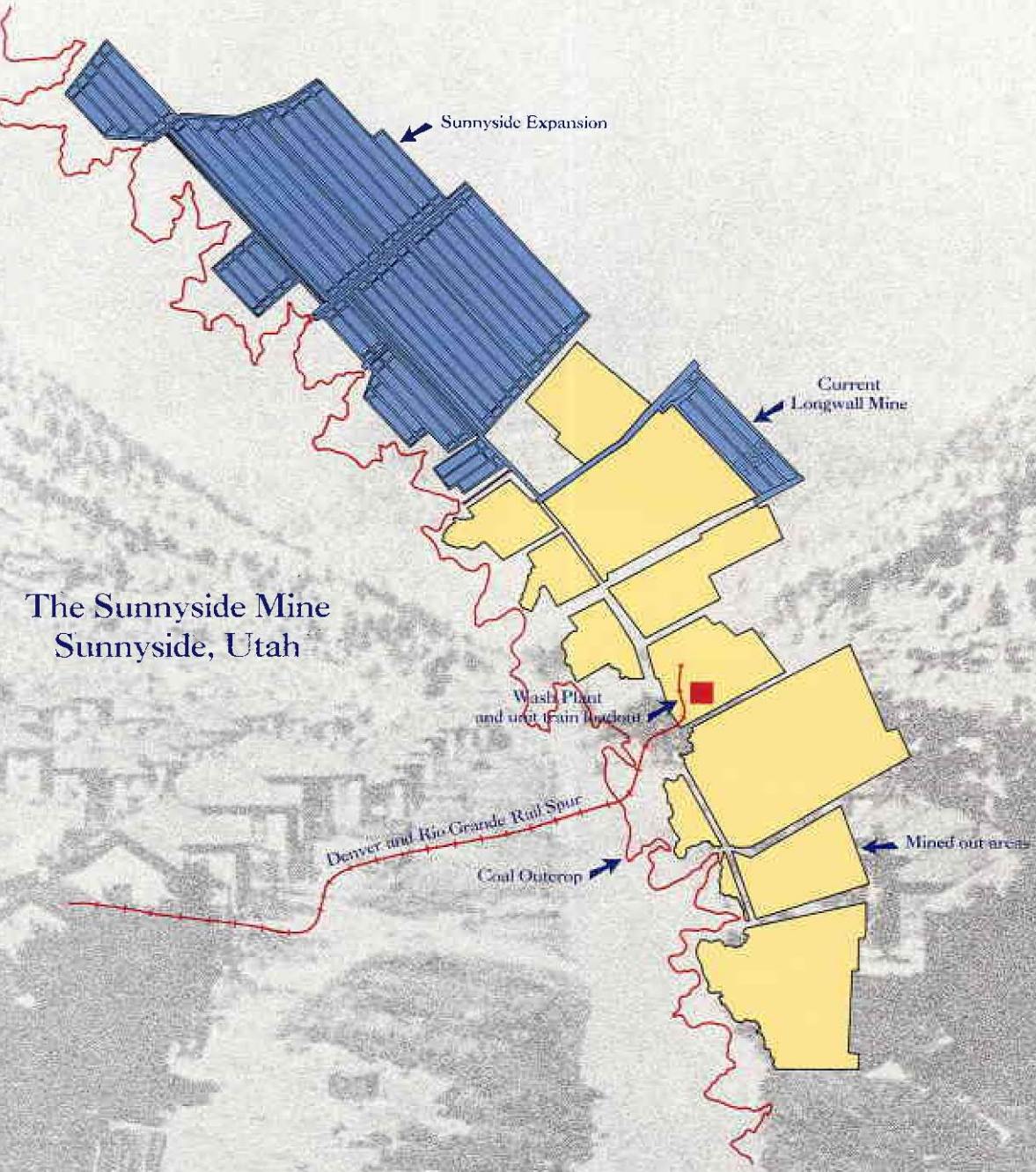
Colorado Coal and Coke, Co. (CCC)

Denver, Colorado

CCC is a trading company incorporated in Colorado which acts as the primary sales agent for Sunnyside's production and which buys and sells coal, anthracite and blast furnace, foundry and petroleum coke. Founded in 1986, CCC maintains offices in Denver.

COLORADO COAL & COKE





The Sunnyside Mine
Sunnyside, Utah

SUNNYSIDE MINES, INC.

Sunnyside Mines, Inc. was formed in 1989 as the holding company for all mining and mineral related interests of several operating companies including the International Anthracite Corporation (IAC), Sunnyside Reclamation and Salvage, Inc. (SRS), Black Diamond Coal Company and Colorado Coal and Coke, Inc. (CCC). Sunnyside is a privately held Colorado corporation with a small number of individual shareholders.

Sunnyside and its subsidiaries produce anthracite in Pennsylvania which is marketed domestically and abroad; metallurgical and thermal coal in Utah which is principally sold to Geneva Steel Corporation in Utah and to industrial accounts in the west; and through its trading arm, Colorado Coal and Coke, Sunnyside brokers other coal to utility and industrial markets.

Sunnyside Mines, Inc. is also engaged in exploration activities in precious metals and industrial minerals.

SUNNYSIDE, UTAH

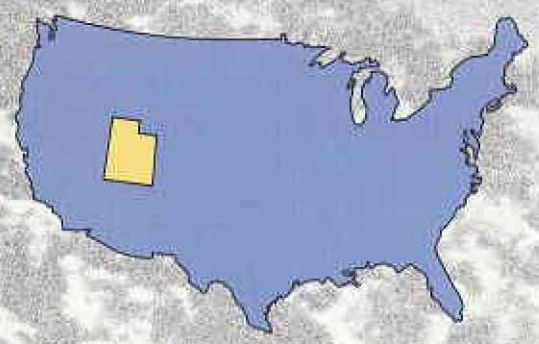
SUNNYSIDE

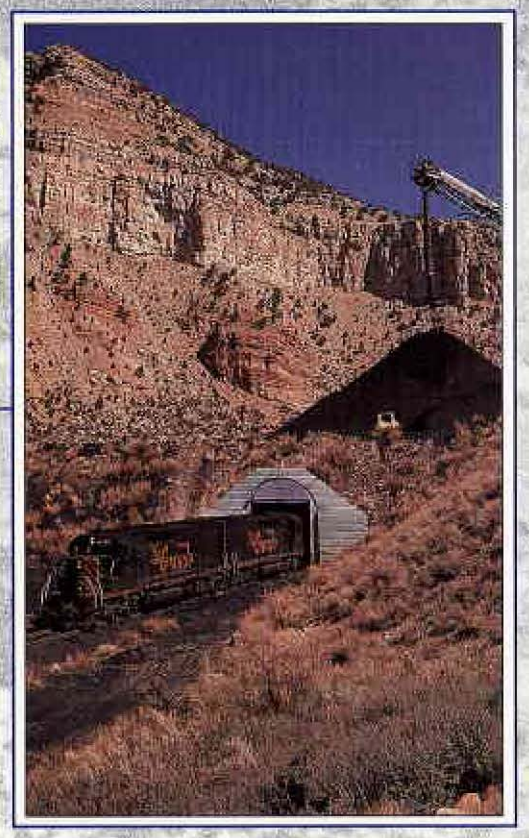
The Sunnyside mine in Utah is the nation's oldest continuously producing coal mine, dating back to 1897. Sunnyside Mines acquired the mine from the Kaiser Steel Bankruptcy in 1989 and initiated shipments in March, 1989. Sunnyside has the capacity to produce 1.5 million tons per year of washed coal and controls recoverable reserves estimated at 32 million tons. The mine produces a high volatile, metallurgical product which is suitable for thermal markets. Coal quality is shown on the attached specification sheet.

The current Sunnyside management has improved productivity from an average of 7-10 tons per manshift under Kaiser to 20-25 tons per manshift and upon completion of development work for the longwall, productivity is expected to rise to 35+ tons per manshift which will make Sunnyside among the most productive mines in Utah.

SUNNYSIDE MINE
THERMAL COAL QUALITY SPECIFICATIONS

	WASHED			RAW		
	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM
FULL PROXIMATE (AS RECEIVED)						
Btu/lb	13,000	12,800	13,400	12,300	12,200	13,000
Ash	6.0%	5.0%	7.0%	11.0%	8.0%	15.0%
Moisture	7.8%	5.0%	8.5%	6.0%	4.0%	8.0%
Volatile matter	37.0%	36.0%	38.0%	38.0%	36.0%	39.0%
Sulfur	0.7%	0.5%	1.0%	0.8%	0.5%	1.0%
Fixed Carbon	50.0%	48.0%	51.0%	49.0%	47.0%	51.0%
Moisture Ash Free Btu	15,000	14,700	15,100	15,000	14,700	15,100
ASH FUSION TEMPERATURES (REDUCING ATMOSPHERE)						
Initial Deformation	2300°F	2250°F	2350°F	2300°F	2250°F	2350°F
Softening	2375°F	2325°F	2400°F	2375°F	2325°F	2400°F
Hemispherical	2470°F	2420°F	2520°F	2470°F	2420°F	2520°F
Fluid	2570°F	2520°F	2620°F	2570°F	2520°F	2620°F
Viscous Range (Fluid-Initial)	270°F	270°F	270°F	270°F	270°F	270°F
ELEMENTAL ANALYSIS OF COAL ASH						
Base/Acid Ratio	0.18%	0.09%	0.20%			
Silicon Dioxide	64.0%	59.2%	69.9%			
Aluminum Oxide	22.3%	21.6%	23.6%			
Iron Oxide	4.8%	3.6%	5.5%			
Magnesium Oxide	0.6%	0.4%	0.7%			
Sodium Oxide	1.1%	1.0%	1.1%			
Potassium Oxide	0.4%	0.4%	0.8%			
Titanium Oxide	0.8%	0.8%	1.3%			
Phosphorous Pentoxide	0.3%	0.3%	1.0%			
Sulphur Trioxide	1.7%	1.3%	3.2%			
ULTIMATE ANALYSIS OF COAL						
Hydrogen	4.8%	4.0%	7.7%			
Carbon	72.3%	68.5%	77.0%			
Sulfur	0.7%	0.3%	1.2%			
Nitrogen	1.5%	1.0%	1.6%			
Oxygen	12.0%	8.0%	20.2%			
Ash	6.0%	4.8%	8.5%			
HARDGROVE GRINDABILITY	54					





SUNNYSIDE MINE
METALLURGICAL COAL QUALITY SPECIFICATIONS

	TYPICAL As Received	TYPICAL Dry Basis	LIMIT Dry Basis
Total Moisture	7.0%		8.5% (Max)
Volatile Matter	37.0%	39.8%	
Ash	5.6%	6.0%	7.0% (Max)
Fixed Carbon	50.4%	54.2%	
Sulfur	0.65%	0.70%	0.68% (Max)
Gross Heating Value			
Btu/lb	13,160	14,000	
Kcal/kg	7,310	7,770	
Ultimate Analysis			
Carbon	72.34%	76.96%	
Hydrogen	4.80%	5.11%	
Nitrogen	1.51%	1.61%	
Chlorine	0.09%	0.1%	
Sulfur	0.65%	0.7%	
Ash	5.60%	6.0%	
O (by difference)	8.01%	8.52%	
Water Soluble Alkalies			
Na_2O	0.016%	0.017%	
K_2O	0.005%	0.006%	
Ash Composition (Ignited Basis)			
SiO_2	53.94%		
Al_2O_3	22.29%		
TiO_2	0.76%		
Fe_2O_3	4.84%		
CaO	3.79%		
MgO	0.53%		
K_2O	0.38%		
Na_2O	1.05%		
SO_3	1.66%		
P_2O_5	0.27%		
Undetermined	0.37%		

Ash Fusion Temperatures	Reducing Atmosphere	Oxidizing Atmosphere
Initial Deformation	2300°F	2400°F
Softening (H=W)	2375°F	2475°F
Hemispheric (H=1.2W)	2470°F	2535°F
Fluid	2570°F	2600°F

Hardgrove Grindability Index	54
Free Swelling Index	3.5
Gieseler Fluidity (Constant Torque)	
Maximum Fluidity	120 ddpm
Temperature at:	
Initial Softening	400°C
Maximum Fluidity	432°C
Solidification	465°C
Audibert-Arnu Dilatation	
Maximum Contraction	-31%
Maximum Dilatation	+15%
Total Dilatation	46%
Temperature at:	
Initial Softening	355°C
Maximum Contraction	415°C
Maximum Dilatation	440°C
Petrographic Analysis	
Reactives (By Volume)	
Vitrinoids V7	8.9%
V6	49.1%
V5	20.5%
Semi-fusinoids	2.5%
Resinoids	1.0%
Exinoids	2.2%
Total Reactives	84.4%
Inerts (By Volume)	
Fusinoids	3.5%
Semi-Fusinoids	5.1%
Micrinoids	3.7%
Mineral Matter	2.2%
Total Inerts	15.6%
Mean Reflectance	0.78
Strength Index	2.78
Composition Balance Index	0.57
Size Consist	
Nominal Size	2 inch x 0 (5 cm x 0)
Plus 2 inch (5 cm)	5% (Max)

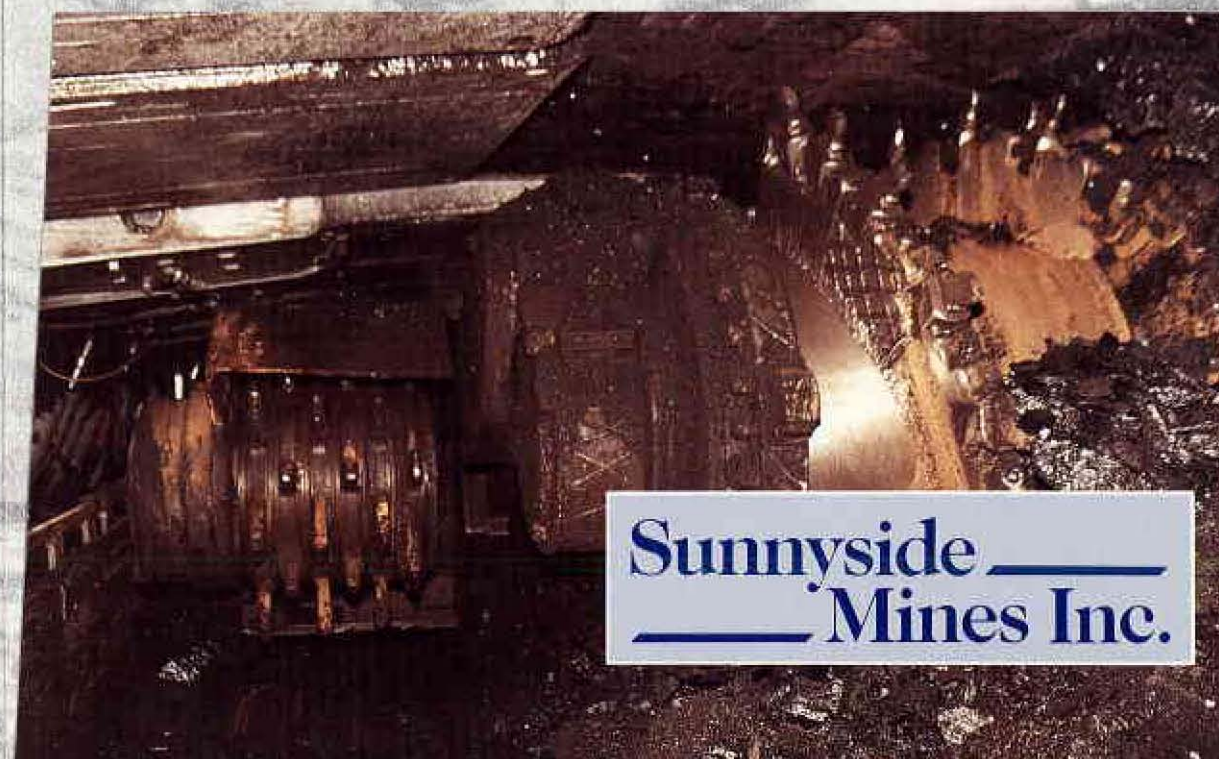
MINE EQUIPMENT

- Westfalia Longwall
- Joy Continuous Miner Sections
- 1.5 MMTPY Capacity Wash Plant
- Unit Train Load-out & Storage

RESERVES

Recoverable Tons

Current	32 million
Expansion	20 million
	52 million



Sunnyside Mines Inc.

SUNNYSIDE MINE
METALLURGICAL COAL QUALITY SPECIFICATIONS

	TYPICAL As Received	TYPICAL Dry Basis	LIMIT Dry Basis
Total Moisture	7.0%	–	8.5% (Max)
Volatile Matter	37.0%	39.8%	
Ash	5.6%	6.0%	7.0% (Max)
Fixed Carbon	50.4%	54.2%	
Sulfur	0.65%	0.70%	0.86% (Max)
Gross Heating Value			
Btu/lb	13,160	14,000	
Kcal/kg	7,310	7,770	
Ultimate Analysis			
Carbon	72.34%	76.96%	
Hydrogen	4.80%	5.11%	
Nitrogen	1.51%	1.61%	
Chlorine	0.09%	0.1%	
Sulfur	0.65%	0.7%	
Ash	5.60%	6.0%	
O (by difference)	8.01%	9.52%	
Water Soluble Alkalies			
Na_2O	0.016%	0.017%	
K_2O	0.006%	0.006%	
Ash Composition (Ignited Basis)			
SiO_2	63.94%		
Al_2O_3	22.29%		
TiO_2	0.76%		
Fe_2O_3	4.84%		
CaO	3.79%		
MgO	0.63%		
K_2O	0.38%		
Na_2O	1.05%		
SO_3	1.68%		
P_2O_5	0.27%		
Undetermined	0.37%		

Ash Fusion Temperatures

	Reducing Atmosphere	Oxidizing Atmosphere
Initial Deformation	2300°F	2400°F
Softening (H=W)	2375°F	2475°F
Hemispheric (H=1/2W)	2470°F	2535°F
Fluid	2570°F	2600°F

Hardgrove Grindability Index 54
Free Swelling Index 3:5

Gieseler Fluidity (Constant Torque)
- Maximum Fluidity ..... 120 ddpm
- Temperature at:
  - Initial Softening ..... 400°C
  - Maximum Fluidity ..... 432°C
  - Solidification ..... 465°C

Audibert-Amu Dilatation
- Maximum Contraction ..... -31%
- Maximum Dilatation ..... +15%
- Total Dilatation 46%
- Temperature at:
  - Initial Softening ..... 355°C
  - Maximum Contraction ..... 415°C
  - Maximum Dilatation ..... 440°C

Petrographic Analysis
- Reactives (By Volume)
  - Vitrinoids V7 ..... 8.9%
  - V8 ..... 49.1%
  - V9 ..... 20.5%
  - Semi-fusinoids 2.5%
  - Resinoids 1.0%
  - Exinoids 2.4%
  - Total Reactives 84.4%
- Inerts (By Volume)
  - Fusinoids 3.5%
  - Semi-Fusinoids 5.1%
  - Micrinoids 3.7%
  - Mineral Matter 3.3%
  - Total Inerts 15.6%
- Mean Reflectance 0.76
- Strength Index 2.78
- Composition Balance Index 0.57

Size Consist
- Nominal Size ..... 2 inch x 0 (5 cm x 0)
- Plus 2 inch (5 cm) ..... 5% (Max)

SUNNYSIDE MINE
THERMAL COAL QUALITY SPECIFICATIONS

	WASHED AVERAGE	WASHED MINIMUM	WASHED MAXIMUM	RAW AVERAGE	RAW MINIMUM	RAW MAXIMUM
FULL PROXIMATE (AS RECEIVED)						
Btu/lb	13,000	12,800	13,400	12,500	12,200	13,000
Ash	6.0%	5.0%	7.0%	11.0%	8.0%	15.0%
Moisture	7.0%	5.0%	8.5%	6.0%	4.0%	8.0%
Volatile matter	37.0%	36.0%	38.0%	38.0%	36.0%	39.0%
Sulfur	0.7%	0.5%	1.0%	0.8%	0.5%	1.0%
Fixed Carbon	50.0%	48.0%	51.0%	48.0%	47.0%	51.0%
Moisture Ash Free Btu	15,000	14,700	15,100	15,000	14,700	15,100
ASH FUSION TEMPERATURES (REDUCING ATMOSPHERE)						
Initial Deformation	2300°F	2250°F	2350°F	2300°F	2250°F	2350°F
Softening	2375°F	2325°F	2400°F	2375°F	2325°F	2400°F
Hemispherical	2470°F	2420°F	2520°F	2470°F	2420°F	2520°F
Fluid	2570°F	2520°F	2620°F	2570°F	2520°F	2620°F
Viscous Range (Fluid-Initial)	270°F	270°F	270°F	270°F	270°F	270°F
ELEMENTAL ANALYSIS OF COAL ASH						
Base/Acid Ratio	0.18%	0.09%	0.20%			
Silicon Dioxide	64.0%	59.2%	69.9%			
Aluminum Oxide	22.3%	21.6%	23.6%			
Iron Oxide	4.8%	3.6%	6.5%			
Magnesium Oxide	0.6%	0.4%	0.7%			
Sodium Oxide	1.1%	1.0%	1.1%			
Potassium Oxide	0.4%	0.4%	0.8%			
Titanium Oxide	0.8%	0.8%	1.3%			
Phosphorous Pentoxide	0.3%	0.3%	1.0%			
Sulphur Trioxide	1.7%	1.3%	3.2%			
ULTIMATE ANALYSIS OF COAL						
Hydrogen	4.8%	4.0%	7.7%			
Carbon	72.3%	68.5%	77.0%			
Sulfur	0.7%	0.3%	1.2%			
Nitrogen	1.5%	1.0%	1.6%			
Oxygen	12.0%	8.0%	20.2%			
Ash	6.0%	4.8%	8.5%			

HARDGROVE GRINDABILITY 54

Sunnyside Mines Inc.

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Fixed Carbon	74.98%	79.08%	
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Carbon	80.57%
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Chlorine	0.01%
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Fluid	2660°F

Hardgrove Grindability Index 74

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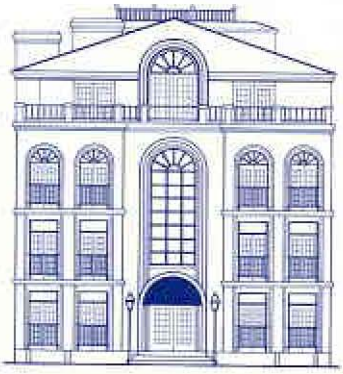

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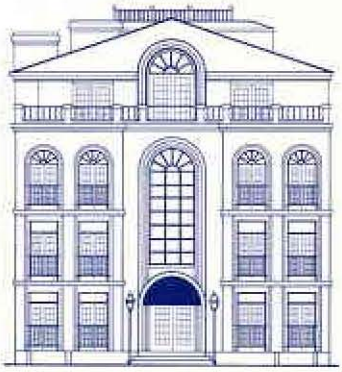

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