

COAL BANK SAMPLE

COAL: CWMBARGOED

GRADE: COBBLES

SEAM:

BCC COAL RANK CODE: 301b

ECE / ISO CLASSIFICATION: 534

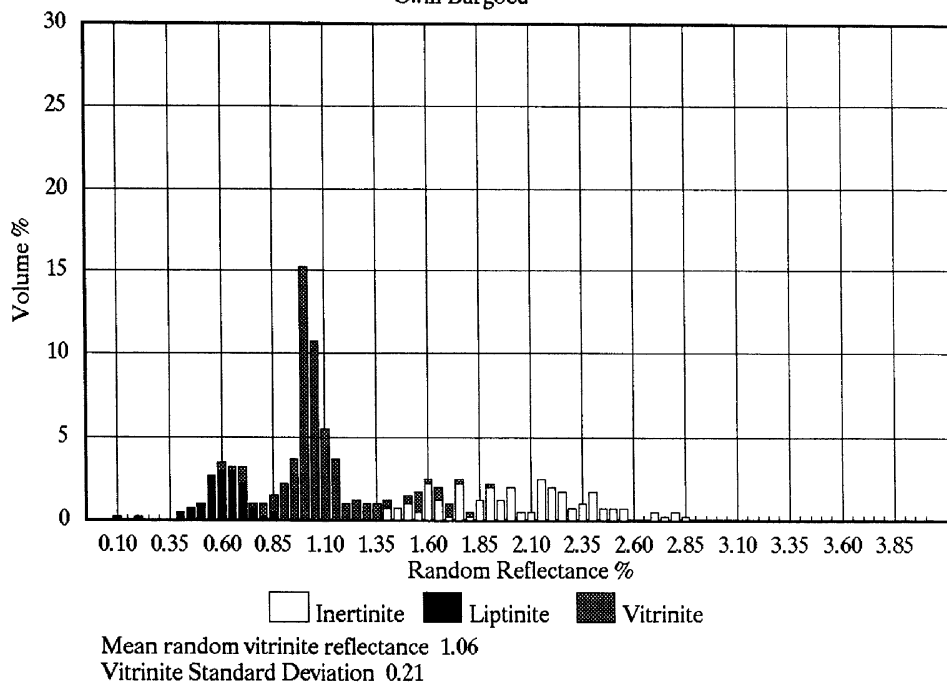
PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	1.0	Carbon (dmmf)	88.5	Na ₂ O	0.6
Ash	2.8	Hydrogen (dmmf)	4.9	K ₂ O	<0.5
Volatile matter	28.5	Oxygen (dmmf)	4.2	CaO	2.7
Fixed carbon	67.7	Nitrogen (dmmf)	1.56	MgO	0.4
Volatile matter (dmmf)	29.8			Fe ₂ O ₃	3.5
		Organic sulphur (db)	0.84	Al ₂ O ₃	38.0
		Sulphate as S (db)	0.00	SiO ₂	36.3
		Pyritic sulphur as S (db)	0.03	SO ₃	0.8
				TiO ₂	1.2
		Chlorine (db)	0.03	Mn ₃ O ₄	<0.1
		Carbon dioxide (db)	0.00	P ₂ O ₅	10.2
		Mineral matter (db)	3.20		
CAKING PROPERTIES		MACERAL ANALYSIS (% by volume, mmmf)			
Swelling Index	5	Vitrinite	54		
Gray-King Coke Type	G5	Exinite	16		
		Inertinite	30		
CALORIFIC VALUE					
kJ / kg (daf)	36280				
ASH FUSION RANGE (°C) *					
Deformation temp.	>1500				
Hemisphere temp.	>1500				
Flow temp.	>1500				

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

This analysis is typical of this specially selected sample, but there may be slight variations between the data given above and that of the actual sample supplied.

ad: as analysed
db: dry basis
daf: dry, ash free
dmmf: dry, mineral matter free
mmf: mineral matter free

INTERACTIVE REFLECTANCE HISTOGRAM
Cwm Bargoed -



COAL BANK SAMPLE

COAL:CORTONWOOD

GRADE:SPECIAL

SEAM:SILKSTONE

BCC COAL RANK CODE:501

ECE / ISO CLASSIFICATION:634

PROXIMATE ANALYSIS

(% a.d.)	
Moisture	1.0
Ash	2.2
Volatile matter	34.7
Fixed carbon	62.1
Volatile matter (dmmf)	36.0

ULTIMATE ANALYSIS (%)

Carbon (dmmf)	87.2
Hydrogen (dmmf)	5.6
Oxygen (dmmf)	4.8
Nitrogen (dmmf)	1.7

ASH ANALYSIS

(% on ash)	
Na ₂ O	0.8
K ₂ O	0.4
CaO	3.9
MgO	1.2
Fe ₂ O ₃	6.4
Al ₂ O ₃	28.4
SiO ₂	52.9
SO ₃	3.1
TiO ₂	1.9
Mn ₂ O ₄	0.2
P ₂ O ₅	0.3

CAKING PROPERTIES

Swelling Index	8.5
Gray-King Coke Type	G8

Organic sulphur (db)	0.60
Sulphate as S (db)	0.02
Pyritic sulphur as S (db)	0.36

CALORIFIC VALUE

kJ / kg (daf)	36200
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MACERAL ANALYSIS

(% by volume , mmmf)	
Vitrinite	82
Exinite	9
Inertinite	9

ASH FUSION RANGE (°C) *

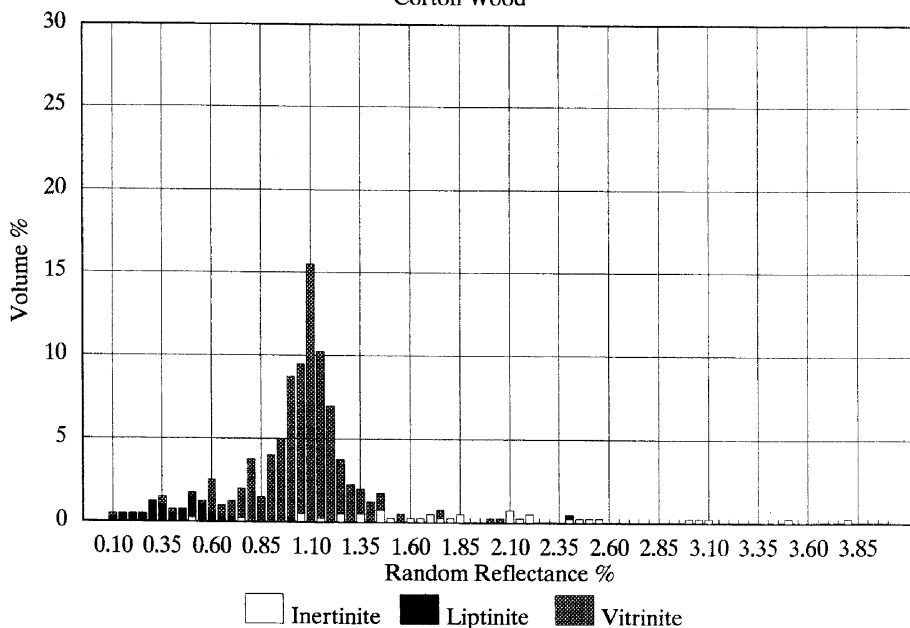
Deformation temp.	1110
Hemisphere temp.	1140
Flow temp.	1190

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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dmmf: dry, mineral matter free
mmf: mineral matter free

INTERACTIVE REFLECTANCE HISTOGRAM
Corton Wood



Mean random vitrinite reflectance 1.03
Vitrinite Standard Deviation 0.22

COAL BANK SAMPLE

COAL:POINT OF AYR

GRADE:SINGLES

SEAM:

BCC COAL RANK CODE:702

ECE / ISO CLASSIFICATION:632

PROXIMATE ANALYSIS

(% a.d.)	
Moisture	2.4
Ash	9.8
Volatile matter	32.7
Fixed carbon	55.1
Volatile matter (dmmf)	38.0

ULTIMATE ANALYSIS (%)

Carbon (dmmf)	87.2
Hydrogen (dmmf)	5.80
Oxygen (dmmf)	4.6
Nitrogen (dmmf)	1.62

ASH ANALYSIS
(% on ash)

Na ₂ O	0.5
K ₂ O	2.8
CaO	4.5
MgO	2.0
Fe ₂ O ₃	12.7
Al ₂ O ₃	24.8
SiO ₂	46.0
SO ₃	4.0
TiO ₂	1.0
Mn ₃ O ₄	0.1
P ₂ O ₅	0.6

CAKING PROPERTIES

Swelling Index	5
Gray-King Coke Type	G

Organic sulphur (db)	0.63
Sulphate as S (db)	0.03
Pyritic sulphur as S (db)	1.03

Chlorine (db)	0.15
Carbon dioxide (db)	0.48
Mineral matter (db)	11.92

CALORIFIC VALUE

kJ / kg (daf)	34940
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MACERAL ANALYSIS
(% by volume , mmmf)

Vitrinite	73
Exinite	16
Inertinite	11

ASH FUSION RANGE (°C) *

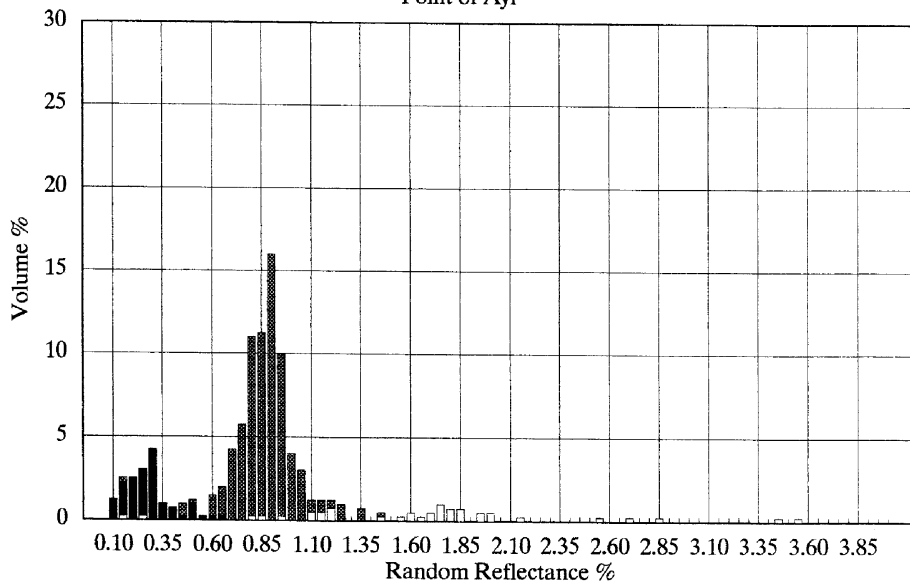
Deformation temp.	1170
Hemisphere temp.	1200
Flow temp.	1250

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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dmmf: dry, mineral matter free
mmf: mineral matter free

INTERACTIVE REFLECTANCE HISTOGRAM
Point of Ayr



□ Inertinite ■ Liptinite ▨ Vitrinite

Mean random vitrinite reflectance 0.85
Vitrinite Standard Deviation 0.15

COAL BANK SAMPLE

COAL: CRESWELL

GRADE: TREBLES

SEAM: THREEQUARTERS

BCC COAL RANK CODE: 502

ECE / ISO CLASSIFICATION: 634

PROXIMATE ANALYSIS

(% a.d.)	
Moisture	2.5
Ash	2.6
Volatile matter	34.7
Fixed carbon	60.2
Volatile matter (dmmf)	36.8

CAKING PROPERTIES

Swelling Index	6.5
Gray-King Coke Type	G8

CALORIFIC VALUE

kJ / kg (daf)	35380
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ASH FUSION RANGE (°C) *

Deformation temp.	1100
Hemisphere temp.	1150
Flow temp.	1230

ULTIMATE ANALYSIS (%)

Carbon (dmmf)	86.2
Hydrogen (dmmf)	5.2
Oxygen (dmmf)	5.6
Nitrogen (dmmf)	1.91

Organic sulphur (db)	0.95
Sulphate as S (db)	<0.05
Pyritic sulphur as S (db)	0.40

Chlorine (db)	0.21
Carbon dioxide (db)	0.15
Mineral matter (db)	3.39

MACERAL ANALYSIS

(% by volume, mmf)	
Vitrinite	81
Exinite	7
Inertinite	12

ASH ANALYSIS

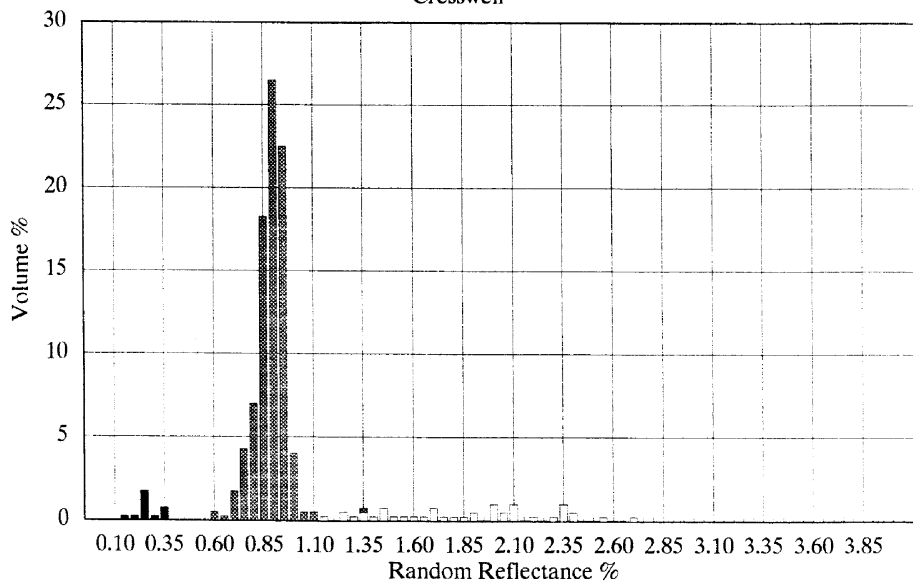
(% on ash)	
Na ₂ O	4.8
K ₂ O	2.6
CaO	1.4
MgO	0.8
Fe ₂ O ₃	29.1
Al ₂ O ₃	24.9
SiO ₂	35.5
SO ₃	0.7
TiO ₂	0.9
Mn ₂ O ₄	<0.1
P ₂ O ₅	0.2

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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 dmmf: dry, mineral matter free
 mmf: mineral matter free

INTERACTIVE REFLECTANCE HISTOGRAM
 Cresswell



Mean random vitrinite reflectance 0.86
 Vitrinite Standard Deviation 0.08

COAL BANK SAMPLE

COAL:GOEDEHOOP

GRADE:CRUSHED

BCC COAL RANK CODE:

PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	2.8	Carbon (dmmf)	85.5	Na ₂ O	0.3
Ash	13.3	Hydrogen (dmmf)	4.58	K ₂ O	0.5
Volatile matter	26.5	Oxygen (dmmf)	7.1	CaO	14.0
Fixed carbon	57.4	Nitrogen (dmmf)	2.06	MgO	3.5
Volatile matter (dmmf)	32.5			Fe ₂ O ₃	5.0
		Organic sulphur (db)		Al ₂ O ₃	31.0
		Sulphate as S (db)		SiO ₂	35.9
		Pyritic sulphur as S (db)		SO ₃	8.8
				TiO ₂	1.6
				Mn ₃ O ₄	0.1
				P ₂ O ₅	2.3
CAKING PROPERTIES		Chlorine (db)	0.00		
Swelling Index	0.5	Carbon dioxide (db)	1.48		
Gray-King Coke Type	B	Mineral matter (db)	16.15		
CALORIFIC VALUE		MACERAL ANALYSIS (% by volume, mmf)			
kJ / kg (daf)	33380	Vitrinite	66		
		Liptinite	3		
		Inertinite	31		
ASH FUSION RANGE (°C) *					
Deformation temp.	1290				
Hemisphere temp.	1370				
Flow temp.	1500				

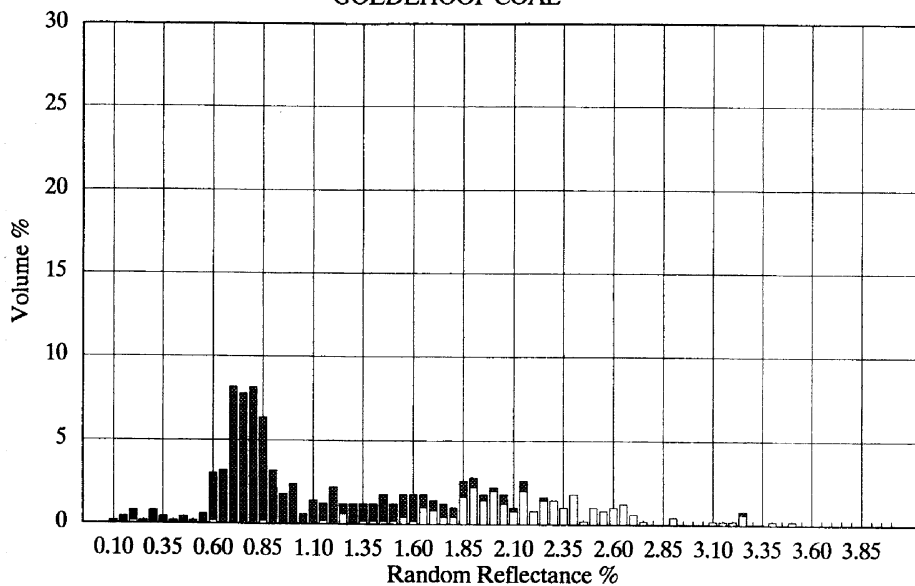
*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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 dmmf: dry, mineral matter free
 mmf: mineral matter free

APPENDIX 10B

INTERACTIVE REFLECTANCE HISTOGRAM
 GOEDEHOOP COAL



Inertinite
 Liptinite
 Vitrinite

Mean random vitrinite reflectance 0.99
 Vitrinite Standard Deviation 0.41