

COAL BANK SAMPLE

COAL:DAW MILL

GRADE:SINGLES

SEAM:THICK COAL

BCC COAL RANK CODE:802

ECE / ISO CLASSIFICATION:711

PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	6.1	Carbon (dmmf)	81.3	Na ₂ O	1.5
Ash	4.4	Hydrogen (dmmf)	4.8	K ₂ O	0.5
Volatile matter	35.7	Oxygen (dmmf)	11.5	CaO	12.0
Fixed carbon	53.8	Nitrogen (dmmf)	1.28	MgO	2.5
Volatile matter (dmmf)	40.4			Fe ₂ O ₃	11.2
				Al ₂ O ₃	23.9
HARDGROVE INDEX	35	Organic sulphur (db)	1.12	SiO ₂	36.8
		Sulphate as S (db)	<0.1	SO ₃	12.9
CAKING PROPERTIES		Pyritic sulphur as S (db)	0.28	TiO ₂	1.1
Swelling Index	1			Mn ₃ O ₄	0.4
Gray-King Coke Type	C	Chlorine (db)	0.21	P ₂ O ₅	<0.3
		Carbon dioxide (db)	0.45		
		Mineral matter (db)	5.84		
CALORIFIC VALUE		MACERAL ANALYSIS			
kJ / kg (daf)	32820	(% by volume , mmf)			
		Vitrinite	66		
		Exinite	13		
		Inertinite	21		
ASH FUSION RANGE (°C) *					
Deformation temp.	1240				
Hemisphere temp.	1270				
Flow temp.	1320				

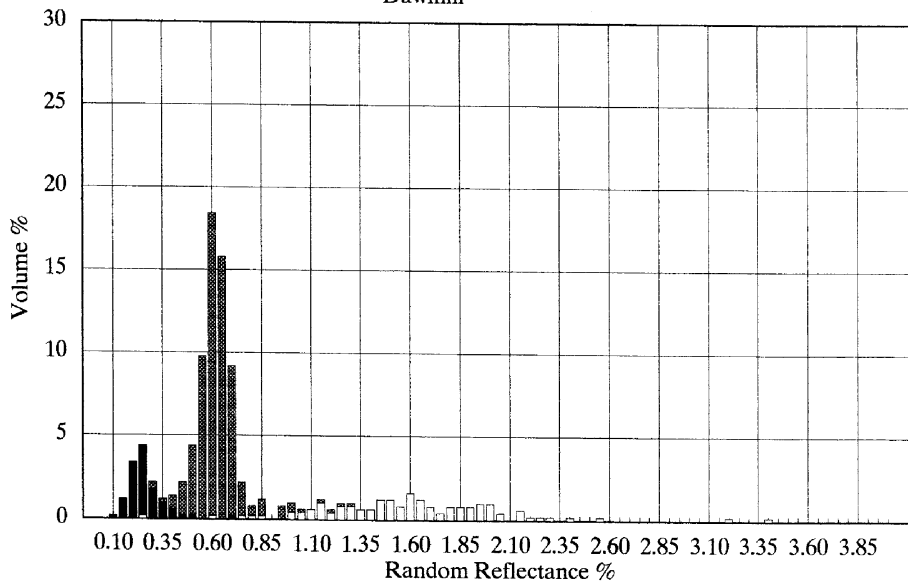
*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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

APPENDIX 31B

INTERACTIVE REFLECTANCE HISTOGRAM
Dawmill



Inertinite
 Liptinite
 Vitrinite

Mean random vitrinite reflectance 0.60
Vitrinite Standard Deviation 0.12

COAL BANK SAMPLE

COAL:LEA HALL

GRADE:SINGLES

SEAM:

BCC COAL RANK CODE:802

ECE / ISO CLASSIFICATION:811

PROXIMATE ANALYSIS

(% a.d.)	
Moisture	8.6
Ash	3.0
Volatile matter	35.2
Fixed carbon	53.2
Volatile matter (dmmf)	40.0

ULTIMATE ANALYSIS (%)

Carbon (dmmf)	81.1
Hydrogen (dmmf)	5.8
Oxygen (dmmf)	10.2
Nitrogen (dmmf)	1.63
Organic sulphur (db)	0.78
Sulphate as S (db)	<0.01
Pyritic sulphur as S (db)	0.18
Chlorine (db)	0.89
Carbon dioxide (db)	0.11
Mineral matter (db)	3.80

ASH ANALYSIS
(% on ash)

Na ₂ O	8.6
K ₂ O	0.2
CaO	17.6
MgO	1.2
Fe ₂ O ₃	11.0
Al ₂ O ₃	16.4
SiO ₂	19.0
SO ₃	22.9
TiO ₂	0.7
Mn ₃ O ₄	0.1
P ₂ O ₅	2.2

CAKING PROPERTIES

Swelling Index	1.5
Gray-King Coke Type	D

CALORIFIC VALUE

kJ / kg (daf)	33480
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MACERAL ANALYSIS
(% by volume , mmf)

Vitrinite	76
Exinite	13
Inertinite	11

ASH FUSION RANGE (°C) *

Deformation temp.	1080
Hemisphere temp.	1130
Flow temp.	1180

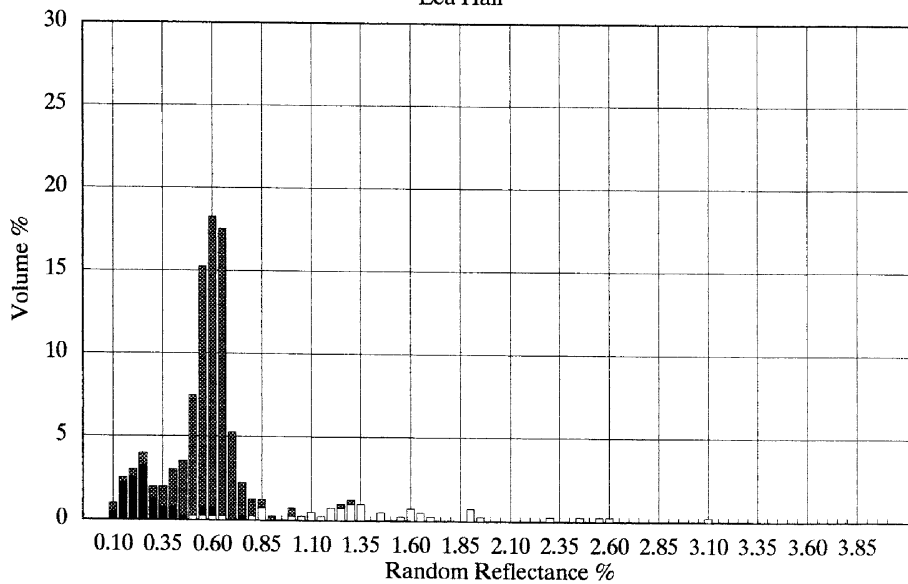
*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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

APPENDIX 32B

INTERACTIVE REFLECTANCE HISTOGRAM
Lea Hall



Inertinite
 Liptinite
 Vitrinite

Mean random vitrinite reflectance 0.56
 Vitrinite Standard Deviation 0.13

COAL BANK SAMPLE

COAL: KALTIM PRIMA

GRADE: SMALLS

BCC COAL RANK CODE: 802

PROXIMATE ANALYSIS

(% a.d.)

Loss on Ignition (db)	95.0
Moisture	4.6
Ash	4.8
Volatile matter	41.4
Fixed carbon	49.3
Volatile matter (dmmf)	46.1

HARDGROVE INDEX

	57
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CAKING PROPERTIES

Swelling Index	2.5
Gray-King Coke Type	C

MACERAL ANALYSIS

(% by volume, mmf)

Vitrinite	94.8
Liptinite	1.4
Inertinite	3.8
Mean Random Vitrinite Reflectance	0.63
Vitrinite Reflectance Standard Deviation	0.09

ULTIMATE ANALYSIS

(%)

Carbon (dmmf)	80.7
Hydrogen (dmmf)	6.2
Oxygen (dmmf)	10.6
Total Nitrogen (dmmf)	1.85
Total Sulphur (db)	1.64
Chlorine (db)	0.02
Mineral matter (db)	6.02
Carbon dioxide (db)	0.06
Forms of Sulphur	
Organic Sulphur (db)	1.24
Sulphate as S (db)	0.07
Pyritic Sulphur as S (db)	0.34
Forms of Nitrogen*	
Pyridinic Nitrogen (db)	23
Pyrrolic Nitrogen (db)	62
Quaternary Nitrogen (db)	14

CALORIFIC VALUE

kJ / kg (db)	31539
kJ / kg (daf)	33212

ASH ANALYSIS

(% on ash)

Na2O	1.0
K2O	2.3
CaO	2.0
MgO	1.4
Fe2O3	17.0
Al2O3	22.1
SiO2	51.1
TiO2	0.9
SO3	0.9
P2O5	1.1
Mn3O4	<0.1

ASH FUSION RANGE (Deg.C)	
Reducing atmosphere (50% CO2 / 50% H2)	
Deformation temp.	1110
Hemisphere temp.	1220
Flow temp	1340
Oxidising atmosphere	
Deformation temp.	1310
Hemisphere temp.	1400
Flow temp	1430

KEY

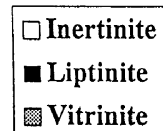
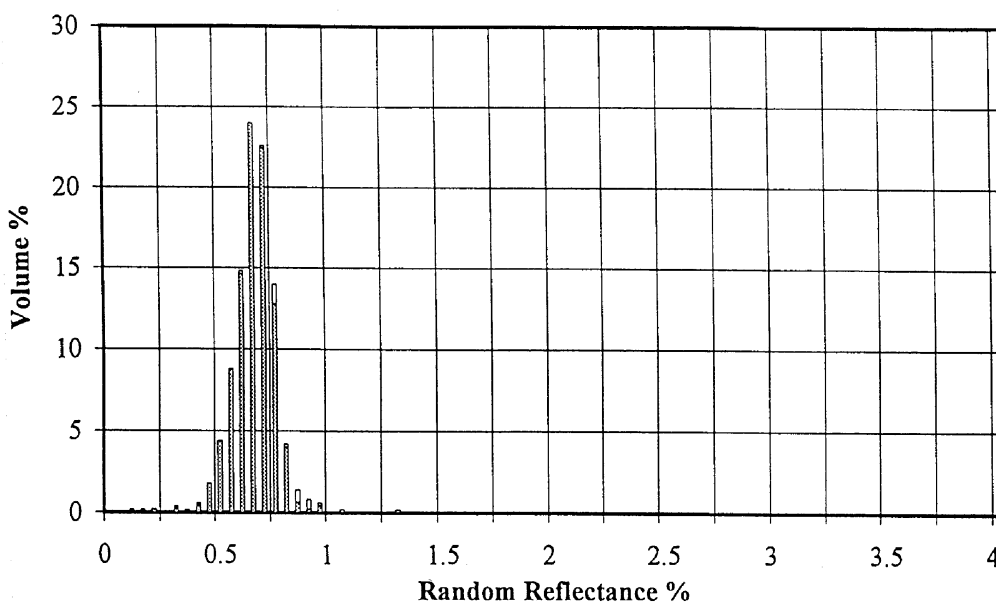
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db:	dry basis
daf:	dry, ash free
dmmf:	dry, mineral matter free
mmf:	mineral matter free

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

* It is generally accepted that <10% of coal-N is bound in amino groups and that the inclusion of amino-N tends to make the fit worse when resolving N 1s spectra.

Where two sets of "Forms of Nitrogen" values have been given (the second set in brackets), the spectral curve fitting is inconclusive.

INTERACTIVE REFLECTANCE HISTOGRAM
KALTIM PRIMA COAL



COAL BANK SAMPLE

COAL:BADDESLEY

GRADE:SINGLES

SEAM:

BCC COAL RANK CODE:802

ECE / ISO CLASSIFICATION:811

PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	6.5	Carbon (dmmf)	80.4	Na ₂ O	1.3
Ash	4.0	Hydrogen (dmmf)	5.7	K ₂ O	2.2
Volatile matter	37.6	Oxygen (dmmf)	10.9	CaO	4.2
Fixed carbon	51.9	Nitrogen (dmmf)	1.37	MgO	1.5
Volatile matter (dmmf)	42.5			Fe ₂ O ₃	9.3
				Al ₂ O ₃	26.7
		Organic sulphur (db)	1.37	SiO ₂	49.7
		Sulphate as S (db)	<0.01	SO ₃	2.9
		Pyritic sulphur as S (db)	0.27	TiO ₂	1.2
				Mn ₃ O ₄	0.1
				P ₂ O ₅	0.7
		Chlorine (db)	0.28		
		Carbon dioxide (db)	0.25		
		Mineral matter (db)	5.37		
CAKING PROPERTIES		MACERAL ANALYSIS (% by volume, mmf)			
Swelling Index	1	Vitrinite	75		
Gray-King Coke Type	C	Exinite	10		
		Inertinite	15		
CALORIFIC VALUE					
kJ / kg (daf)	33000				
ASH FUSION RANGE (°C) *					
Deformation temp.	1240				
Hemisphere temp.	1260				
Flow temp.	1290				

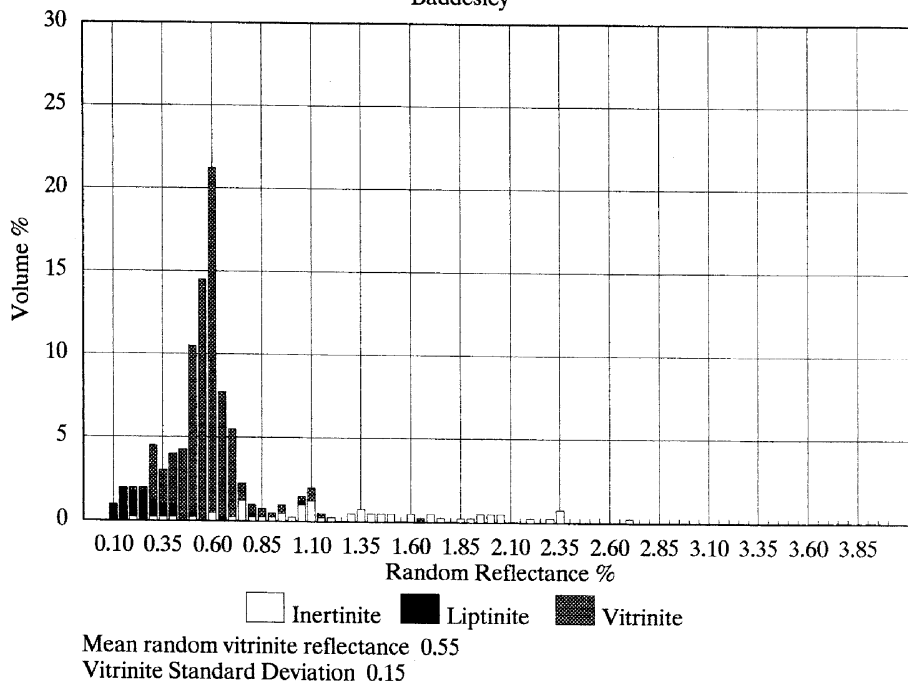
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db: dry basis
daf: dry, ash free
dmmf: dry, mineral matter free
mmf: mineral matter free

APPENDIX 34B

INTERACTIVE REFLECTANCE HISTOGRAM
Baddesley



COAL BANK SAMPLE

COAL:NADINS (OPEN CAST)

GRADE:SINGLES

SEAM:

BCC COAL RANK CODE:902

ECE / ISO CLASSIFICATION:801

PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	13.3	Carbon (dmmf)	80.1	Na ₂ O	0.3
Ash	7.4	Hydrogen (dmmf)	5.1	K ₂ O	2.4
Volatile matter	34.9	Oxygen (dmmf)	12.0	CaO	8.7
Fixed carbon	44.4	Nitrogen (dmmf)	1.9	MgO	2.8
Volatile matter (dmmf)	45.1			Fe ₂ O ₃	27.5
HARDGROVE INDEX	35	Organic sulphur (db)	0.82	Al ₂ O ₃	17.1
CAKING PROPERTIES		Sulphate as S (db)	0.08	SiO ₂	31.5
Swelling Index	0.5	Pyritic sulphur as S (db)	1.34	SO ₃	7.1
Gray-King Coke Type	B			TiO ₂	0.6
		Chlorine (db)	0.03	Mn ₃ O ₄	0.4
		Carbon dioxide (db)	0.84	P ₂ O ₅	0.8
		Mineral matter (db)	10.78		
CALORIFIC VALUE		MACERAL ANALYSIS			
kJ / kg (daf)	32420	(% by volume, mmf)			
		Vitrinite	76		
		Exinite	10		
		Inertinite	14		
ASH FUSION RANGE (°C) *					
Deformation temp.	1100				
Hemisphere temp.	1120				
Flow temp.	1240				

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

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

APPENDIX 35B

INTERACTIVE REFLECTANCE HISTOGRAM
 Nadins

