

Appendix C      VR008 and VR009 assay results



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## HARD ROCK COAL MINING

Testing and Analysing of Standard Project No: VR008

For Free Moisture, Proximate, Total Sulfur, Calorific Value  
And Relative Density Analysis

**Report No:** 21011911

**Report To:** Mr Ron Gregory  
Manager  
Hard Rock Coal Mining  
31 Gray Street  
Fingal, 7214  
Tasmania

**Report CC:** Mr Ken Morrison  
Hard Rock Coal Mining  
31 Gray Street  
Fingal, 7214  
Tasmania

**Sampled By:** Client

**Samples Received:** October 2012

**Order No:** 61

**Date Reported:** 19 October 2012

Greg Van Gestel  
Laboratory Manager  
ALS Coal Division - Richlands

ADDRESS 478 Freeman Road Richlands QLD 4077 Australia | PHONE +61 7 3713 8400 | FAX +61 7 3217 0774  
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## ANALYSIS AND TESTING REPORT

### HARD ROCK COAL MINING

Sample Details	Sample:HVC160 Hole:VR008 Mass:4.42 kg	Sample:HVC161 Hole:VR008 Mass:6.48 kg	Sample:HVC162 Hole:VR008 Mass:3.99 kg
<b>PROXIMATE ANALYSIS</b>			
Air Dried Moisture %	5.1	4.5	5.0
Ash %	55.0	47.5	33.4
Volatile Matter %	16.9	19.8	20.2
Fixed Carbon %	23.0	28.2	41.4
Free Moisture % (a.r.)	1.6	1.6	1.6
Total Sulfur %	0.17	0.25	0.30
<b>CALORIFIC VALUE</b>			
Calorific Value MJ/kg	11.52	14.95	19.52
Calorific Value kcal/kg	2752	3572	4662
Relative Density	1.92	1.77	1.66

All results reported to air dried basis unless noted  
a.r. = as received basis

Sample Details	Sample:HVC163 Hole:VR008 Mass:1.92 kg	Sample:HVC164 Hole:VR008 Mass:1.80 kg	Sample:HVC165 Hole:VR008 Mass:0.51 kg
<b>PROXIMATE ANALYSIS</b>			
Air Dried Moisture %	3.4	4.4	3.8
Ash %	72.5	31.2	48.2
Volatile Matter %	15.2	25.0	22.9
Fixed Carbon %	8.9	39.4	25.1
Free Moisture % (a.r.)	2.0	1.3	1.6
Total Sulfur %	0.06	0.36	0.28
<b>CALORIFIC VALUE</b>			
Calorific Value MJ/kg	4.51	21.07	15.11
Calorific Value kcal/kg	1076	5034	3608
Relative Density	2.25	1.56	1.77

All results reported to air dried basis unless noted  
a.r. = as received basis



ACCREDITED TESTS

HARD COAL TEST	ABBREVIATION	STANDARD /REFERENCE
Abrasion Index	AI	AS1038.19
Adiabatic Self Heating		AL035 (In-House)
Ash	A	AS1038.3
Ash Fusibility		AS1038.15
Carbon		AS1038.6.4
Carbonate Carbon	C <sub>m</sub>	AS1038.23
Chlorine	Cl	AS1038.8
Crucible Swelling Number	CSN	AS1038.12.1
Dilatometer		AS 1038.12.3
Fixed Carbon	FC	AS1038.3
Float/Sink Analysis	F/S	AS4156.1
Forms of Sulfur	FOS [S <sub>o</sub> , S <sub>p</sub> , S <sub>s</sub> ]	AS1038.11
Gieseler		AS1038.12.4.1
Gray King Coke Type	GKCT	AS1038.12.2
Hardgrove Grindability Index	HGI	AS1038.20
Hydrogen	H	AS1038.6.4
Moisture (residual)	M <sub>r</sub>	AS1038.3
Moisture Holding Capacity	MHC	AS1038.17
Nitrogen	N	AS1038.6.4
Oxygen	O	AS1038.16
Phosphorus	P	BS1016.14
Relative Density	RD	AS1038.21.1.1
Relative Ignition Temperature	RIT	AL030 (In-House)
Size Analysis		AS3881
Gross Calorific Value	q	AS1038.5
Total Moisture	M	AS1038.1
Total Sulfur	S	AS1038.6.3.3
Volatile Matter	VM	AS1038.3
Ash Analysis		AL044 (In-House) *

COKE TEST	ABBREVIATION	STANDARD /REFERENCE
Proximate Analysis		AS 1038.4

Note(s):

1. Acceptance and reporting of results is in accordance with AS1038.16
2. Sampling by ACIRL is in accordance with the following AS2617 (seams, insitu);  
AS4264.1 Sampling Procedures ;  
AS4264.4 Determination of Precision and Bias
3. All analyses reported to Air-Dried Basis unless otherwise indicated.
- \*4. Ash Analysis performed at ACIRL Maitland laboratory (accreditation held).  
Based on AS1038.14.2, variation ICP instead of flame for species excitation.



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**NON ACCREDITED TEST**

The following tests are not covered in by the scope of accreditation relating to the laboratories technical accreditation.

<b><u>TEST</u></b>	<b><u>STANDARD/REFERENCE</u></b>
Drop Shatter	AS2519
Durham Cone	AS1038.25
Froth Flotation	AS4156.2 and Client Specific Procedures
Mineral Matter	AS1038.22
Pre- Treatment	AS2519
Roadway Dusts	QLD Department of Mines and Energy - Quality of incompatible dust, sampling and analysis of roadway dust in underground coal mine - Coal Mining Safety and Health Act 1999 Recognised Standard - No. 05, July 2003
Roga Index	ISO335
Caking Index	ISO15585
Sapozhnikov	Journal of Mine Metals and Fuels India Oct 1978
Size Adjustment	AS2519



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**HARD ROCK COAL MINING**

Testing and Analysing of Standard Project No: VR009

For Free Moisture, Proximate, Total Sulfur, Calorific Value  
And Relative Density Analysis

**Report No:** 21011992

**Report To:** Mr Ron Gregory  
Manager  
Hard Rock Coal Mining  
31 Gray Street  
Fingal, 7214  
Tasmania

**Report CC:** Mr Ken Morrison  
Hard Rock Coal Mining  
31 Gray Street  
Fingal, 7214  
Tasmania

**Sampled By:** Client

**Samples Received:** October 2012

**Order No:** 62

**Date Reported:** 30 January 2013

A handwritten signature in black ink, reading 'G. Van Gestel', is positioned above the printed name.

**Greg Van Gestel**  
**Laboratory Manager**  
**ALS Coal Division - Richlands**

ADDRESS 478 Freeman Road Richlands QLD 4077 Australia | PHONE +61 7 3713 8400 | FAX +61 7 3217 0774  
ACIRL Pty Ltd ABN 41 000 513 888 Part of the ALS Group A Campbell Brothers Limited Company



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REPORT No: 21011992  
Date: 30/01/13 Page 2 of 5

## ANALYSIS AND TESTING REPORT

### HARD ROCK COAL

Sample Details	Project - VR009 Sample:MVC169 Mass:7.22 kg	Project - VR009 Sample:MVC170 Mass:5.38 kg	Project - VR009 Sample:MVC171 Mass:2.40 kg
<b>PROXIMATE ANALYSIS</b>			
Moisture %	4.6	4.4	3.8
Ash %	34.5	27.9	47.1
Volatile Matter %	24.2	22.5	21.6
Fixed Carbon %	36.7	45.2	27.5
Free Moisture % (a.r.)	1.6	2.0	2.5
Total Sulfur %	0.32	0.35	0.29
<b>CALORIFIC VALUE</b>			
Calorific Value MJ/kg	19.30	22.10	15.61
Calorific Value kcal/kg	4608	5278	3728
Relative Density	1.63	1.57	1.75

All results reported to air dried basis unless noted  
a.r. = as received basis

Sample Details	Project - VR009 Sample:MVC172 Mass:1.24 kg	Project - VR009 Sample:MVC173 Mass:2.06 kg	Project - VR009 Sample:MVC174 Mass:4.69 kg
<b>PROXIMATE ANALYSIS</b>			
Moisture %	3.4	3.9	3.8
Ash %	72.7	49.0	30.6
Volatile Matter %	12.2	15.0	21.3
Fixed Carbon %	11.7	32.1	44.3
Free Moisture % (a.r.)	2.6	1.8	3.3
Total Sulfur %	0.11	0.20	0.29
<b>CALORIFIC VALUE</b>			
Calorific Value MJ/kg	5.49	14.01	21.43
Calorific Value kcal/kg	1312	3346	5120
Relative Density	2.15	1.86	1.60

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Date: 30/01/13 Page 3 of 5

## ANALYSIS AND TESTING REPORT

### HARD ROCK COAL

Sample Details	Project - VR009 Sample:MVC175 Mass:3.53 kg	Project - VR009 Sample:MVC176 Mass:6.83 kg
<b>PROXIMATE ANALYSIS</b>		
Moisture %	3.7	4.2
Ash %	38.1	36.1
Volatile Matter %	20.1	20.7
Fixed Carbon %	38.1	39.0
Free Moisture % (a.r.)	1.0	1.8
Total Sulfur %	0.27	0.35
<b>CALORIFIC VALUE</b>		
Calorific Value MJ/kg	18.14	18.92
Calorific Value kcal/kg	4332	4520
Relative Density	1.68	1.65

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Crucible Swelling Number	CSN	AS1038.12.1
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Fixed Carbon	FC	AS1038.3
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Forms of Sulfur	FOS [S <sub>o</sub> , S <sub>p</sub> , S <sub>s</sub> ]	AS1038.11
Gieseler		AS1038.12.4.1
Gray King Coke Type	GKCT	AS1038.12.2
Hardgrove Grindability Index	HGI	AS1038.20
Hydrogen	H	AS1038.6.4
Moisture (residual)	M <sub>r</sub>	AS1038.3
Moisture Holding Capacity	MHC	AS1038.17
Nitrogen	N	AS1038.6.4
Oxygen	O	AS1038.16
Phosphorus	P	BS1016.14
Relative Density	RD	AS1038.21.1.1
Relative Ignition Temperature	RIT	AL030 (In-House)
Size Analysis		AS3881
Gross Calorific Value	q	AS1038.5
Total Moisture	M	AS1038.1
Total Sulfur	S	AS1038.6.3.3
Volatile Matter	VM	AS1038.3
Ash Analysis		AL044 (In-House) *

<b>COKE TEST</b>	<b>ABBREVIATION</b>	<b>STANDARD /REFERENCE</b>
Proximate Analysis		AS 1038.4

**Note(s):**

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Caking Index	ISO15585
Sapozhnikov	Journal of Mine Metals and Fuels India Oct 1978
Size Adjustment	AS2519