



right solutions.
right partner.

alsglobal.com

ACIRL Quality Testing Services Pty Ltd
Trading as ACTest
(ABN 66 003 451 876)
2 Spit Island Close,
Mayfield, NSW, 2304, Australia
Tel: +61 2 4014 2600
Fax: +61 2 4014 2699

CERTIFICATE OF SAMPLING AND ANALYSIS

ACTEST REFERENCE NO: 30084725
VESSEL: AZALEA ISLAND
SHIPPER: BHP BILLITON MARKETING AG
CARGO DESCRIPTION: NEWCASTLE STEAMING COAL IN BULK
LOAD PORT: NCIG, NEWCASTLE, AUSTRALIA
DISCHARGE PORT: JAPANESE PORT(S)
WEIGHT: 94,541 Metric Tonnes

THIS IS TO CERTIFY that we have carried out the inspection, sampling and analysis of the above mentioned shipment of NEWCASTLE STEAMING COAL IN BULK.

SAMPLES: Samples on a sub-lot basis were collected using an automated mechanical sampling system at NCIG, NEWCASTLE, AUSTRALIA, in accordance with ISO standards as the cargo was loaded into the vessel.

ANALYSIS: Samples were analysed according to ISO Standard Methods. The following is the calculated composite of analysis performed

RESULTS:

Total Moisture	(ARB)	11.3 %
Moisture in the Analysis Sample	(ADB)	3.5 %
Ash	(ARB)	13.4 %
Ash	(ADB)	14.6 %
Ash	(DB)	15.1 %
Volatile Matter	(ARB)	28.7 %
Volatile Matter	(ADB)	31.2 %
Fixed Carbon	(ADB)	50.7 %
Total Sulfur	(ARB)	0.50 %
Total Sulfur	(ADB)	0.54 %
Gross Calorific Value	(ARB)	6121 kcal/kg
Gross Calorific Value	(ADB)	6659 kcal/kg
Net Calorific Value	(ARB)	5861 kcal/kg
Nitrogen	(DAF)	2.04 %
Fuel Ratio	(ADB)	1.62
Hardgrove Grindability Index		54
Size	50mm x 0	98.7 %
Size	2mm x 0	31.3 %

Electronic Signed Certificate and should be considered Original

Signed and dated
at ALS Coal Newcastle
03/10/2023

for and on behalf of ACIRL Quality Testing Services
Pty Ltd



right solutions.
right partner.

alsglobal.com

ACIRL Quality Testing Services Pty Ltd
Trading as ACTest
(ABN 66 003 451 876)
2 Spit Island Close,
Mayfield, NSW, 2304, Australia
Tel: +61 2 4014 2600
Fax: +61 2 4014 2699

CERTIFICATE OF SAMPLING AND ANALYSIS

ACTEST REFERENCE NO: 30084725
VESSEL: AZALEA ISLAND
SHIPPER: BHP BILLITON MARKETING AG
CARGO DESCRIPTION: NEWCASTLE STEAMING COAL IN BULK
LOAD PORT: NCIG, NEWCASTLE, AUSTRALIA
DISCHARGE PORT: JAPANESE PORT(S)
WEIGHT: 94,541 Metric Tonnes

THIS IS TO CERTIFY that we have carried out the inspection, sampling and analysis of the above mentioned shipment of NEWCASTLE STEAMING COAL IN BULK.

SAMPLES: Samples on a sub-lot basis were collected using an automated mechanical sampling system at NCIG, NEWCASTLE, AUSTRALIA, in accordance with ISO standards as the cargo was loaded into the vessel.

ANALYSIS: Samples were analysed according to ISO Standard Methods. The following is the calculated composite of analysis performed

Ash Fusion Temperatures	(Reducing Atmosphere)
Deformation	1480 °C
Hemisphere	1540 °C
Flow	>1550 °C
Ash Fusion Temperature	(Oxidizing Atmosphere)
Deformation	1530 °C
Hemisphere	>1550 °C
Flow	>1550 °C
Ultimate Analysis	(Dry Basis)
Carbon	70.4 %
Hydrogen	4.52 %
Nitrogen	1.73 %
Oxygen (by difference)	7.7 %

Electronic Signed Certificate and should be considered Original

Signed and dated
at ALS Coal Newcastle
03/10/2023

for and on behalf of ACIRL Quality Testing Services
Pty Ltd



right solutions.
right partner.

alsglobal.com

ACIRL Quality Testing Services Pty Ltd
Trading as ACTest
(ABN 66 003 451 876)
2 Spit Island Close,
Mayfield, NSW, 2304, Australia
Tel: +61 2 4014 2600
Fax: +61 2 4014 2699

CERTIFICATE OF SAMPLING AND ANALYSIS

ACTEST REFERENCE NO: 30084725
VESSEL: AZALEA ISLAND
SHIPPER: BHP BILLITON MARKETING AG
CARGO DESCRIPTION: NEWCASTLE STEAMING COAL IN BULK
LOAD PORT: NCIG, NEWCASTLE, AUSTRALIA
DISCHARGE PORT: JAPANESE PORT(S)
WEIGHT: 94,541 Metric Tonnes

THIS IS TO CERTIFY that we have carried out the inspection, sampling and analysis of the above mentioned shipment of NEWCASTLE STEAMING COAL IN BULK.

SAMPLES: Samples on a sub-lot basis were collected using an automated mechanical sampling system at NCIG, NEWCASTLE, AUSTRALIA, in accordance with ISO standards as the cargo was loaded into the vessel.

ANALYSIS: Samples were analysed according to ISO Standard Methods. The following is the calculated composite of analysis performed

Ash Analysis	(Dry Basis)
SiO ₂	66.8 %
Al ₂ O ₃	23.9 %
Fe ₂ O ₃	4.30 %
CaO	0.81 %
MgO	0.73 %
Na ₂ O	0.39 %
K ₂ O	1.4 %
TiO ₂	1.2 %
Mn ₃ O ₄	0.045 %
P ₂ O ₅	0.30 %
SO ₃	0.41 %
BaO	0.088 %
SrO	0.064 %
ZnO	0.015 %

Electronic Signed Certificate and should be considered Original

Signed and dated
at ALS Coal Newcastle
03/10/2023

for and on behalf of ACIRL Quality Testing Services
Pty Ltd



right solutions.
right partner.

alsglobal.com

ACIRL Quality Testing Services Pty Ltd
Trading as ACTest
(ABN 66 003 451 876)
2 Spit Island Close,
Mayfield, NSW, 2304, Australia
Tel: +61 2 4014 2600
Fax: +61 2 4014 2699

CERTIFICATE OF SAMPLING AND ANALYSIS

ACTEST REFERENCE NO: 30084725
VESSEL: AZALEA ISLAND
SHIPPER: BHP BILLITON MARKETING AG
CARGO DESCRIPTION: NEWCASTLE STEAMING COAL IN BULK
LOAD PORT: NCIG, NEWCASTLE, AUSTRALIA
DISCHARGE PORT: JAPANESE PORT(S)
WEIGHT: 94,541 Metric Tonnes

THIS IS TO CERTIFY that we have carried out the inspection, sampling and analysis of the above mentioned shipment of NEWCASTLE STEAMING COAL IN BULK.

SAMPLES: Samples on a sub-lot basis were collected using an automated mechanical sampling system at NCIG, NEWCASTLE, AUSTRALIA, in accordance with ISO standards as the cargo was loaded into the vessel.

ANALYSIS: Samples were analysed according to ISO Standard Methods. The following is the calculated composite of analysis performed

Trace Analysis	(Dry Basis)
Boron	TBA ppm
Selenium	TBA ppm
Arsenic	TBA ppm
Mercury	0.04 ppm
Chlorine	TBA ppm
Fluorine	TBA ppm
Lead	TBA ppm
Cadmium	TBA ppm
Chromium	TBA ppm
Hexavalent Chromium	TBA ppm
Phosphorus	200 ppm
Trace Analysis	(Air Dried Basis)
Chlorine	TBA ppm
Fluorine	TBA ppm

Electronic Signed Certificate and should be considered Original

Signed and dated
at ALS Coal Newcastle
03/10/2023

for and on behalf of ACIRL Quality Testing Services
Pty Ltd