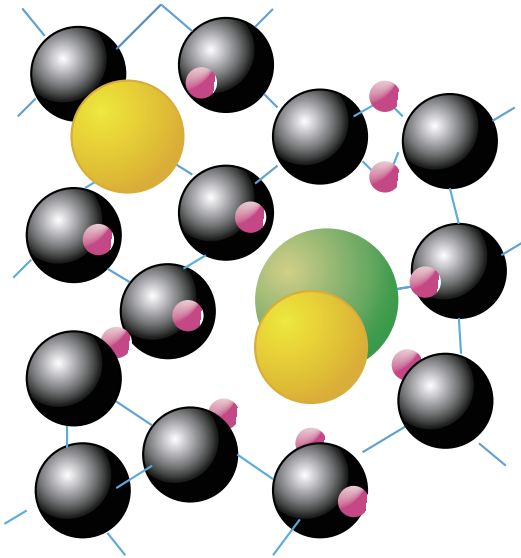


Analysis Update 2004

ANALYSIS OF NEW ZEALAND INDUSTRIAL COALS 2004



COAL MOLECULE - A MIXTURE OF CARBON AND HYDROGEN ATOMS - WITH SMALL AMOUNTS OF SULPHUR BOUND WITH CARBON OR IRON, AND OTHER ELEMENTS.



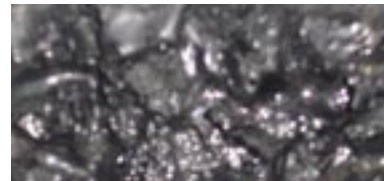
CRL Energy Ltd is an independent coal testing laboratory, which has collated the accompanying data. In some cases the coal producer has supplied the analyses and in other cases CRL Energy has carried out the sampling and analysis work. The work is funded by the Coal Association of New Zealand Inc.



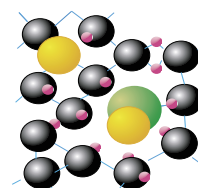
CRL Energy analyses have been carried out in a laboratory accredited by International Accreditation New Zealand. International Accreditation New Zealand is the national accreditation authority for laboratories and inspection bodies and operates in accordance with ISO/IEC Guide 58:1990 and accredits to ISO 17025:1999 for laboratories.

Disclaimer: These coal specifications are averages and should not be used for design of combustion and handling plant. Current coal specifications should be sought from the supplier(s) prior to plant design or modification.

ANALYSIS OF NEW ZEALAND INDUSTRIAL COALS 2004



Name of Mine	Mine Ownership	Moisture	Ash	Volatile Matter	Fixed Carbon	Gross Calorific Value	Gross Calorific Value	Net Calorific Value	Sulphur	Crucible Swelling	Ash Fusion Temp Hemi	Volatile Matter	Gross Calorific Value
AS RECEIVED BASIS		%	%	%	%	MJ/kg	Btu/lb	MJ/kg	%	No.	°C	DRY ASH FREE %	DRY ASH FREE MJ/kg
Waikato													
Huntly East No. 1	Solid Energy	20.6	3.8	34.7	41.1	22.93	9860	21.55	0.21	0	1280	45.8	30.29
Kopako	Solid Energy	26.7	3.9	33.4	36.0	20.17	8680	18.75	0.15	0	1220	48.1	29.06
O'Reilly's	O'Reilly's Opencast Ltd	19.8	5.8	34.6	39.8	22.13	9520	20.80	0.23	0	1260	46.5	29.74
Rotowaro	Solid Energy	21.0	4.6	34.4	40.1	22.24	9570	20.88	0.23	0	1210	46.1	29.87
Buller													
Cascade	Cascade Mining Ltd	9.7	1.6	36.1	52.7	29.96	12890	28.65	0.60	3 1/2	1290	40.6	33.76
Heaphy	Heaphy Mining Ltd	18.1	3.8	36.8	41.3	24.20	10410	22.85	2.25	0	1140	47.1	30.99
New Creek	New Creek Mining	18.9	1.6	36.4	43.2	23.93	10290	22.57	4.2	1/2	1120	45.7	30.08
Stockton	Solid Energy	8.1	2.9	31.0	58.0	31.65	13620	30.40	1.9	9	1550	34.8	35.56
Reefton													
Echo	Francis Mining Co Ltd	5.9	2.1	38.7	53.2	30.87	13280	29.61	0.46	3 1/2	1500	42.1	33.57
Giles Creek	Birchfield Coal Mines Ltd	29.4	2.8	32.1	35.7	19.04	8190	17.60	0.42	0	1260	47.4	28.09
Island Block	Solid Energy	6.6	2.1	39.3	51.9	30.46	13100	29.19	1.51	4	1220	43.1	33.39
Terrace	Solid Energy	15.1	5.1	36.6	43.2	24.98	10750	23.71	1.11	1	1180	45.9	31.28
Greymouth													
Roa	Francis Mining Co Ltd	6.7	6.5	18.5	68.3	31.95	13750	30.77	0.27	9+	1360	21.3	36.82
Spring Creek	Solid Energy	10.2	2.5	37.6	49.7	29.83	12840	28.53	0.35	2 1/2	1230	43.1	34.19
Canterbury													
Mt Somers	Mt Somers Mines Ltd	28.1	11.6	29.3	31.1	17.71	7620	16.35	2.50	0	1300	48.6	29.32
Canterbury Coal	Canterbury Coal Ltd	27.5	3.0	32.4	37.1	20.84	8970	19.40	0.38	0	1300	46.6	29.99
Otago													
Harliwich	Harliwich Carrying Co	28.8	6.3	38.2	26.6	18.52	7970	17.11	0.43	0	1290	58.9	28.54
Kai Point	Kai Point Coal Co Ltd	30.4	4.7	30.8	34.1	19.67	8460	18.19	1.52	0	1340	47.5	30.31
Southland													
Goodwin	New Vale Coal Co	42.2	3.1	29.8	24.9	14.98	6440	13.36	0.47	0	1360	54.5	27.36
New Vale	New Vale Coal Co	40.5	3.1	29.9	26.4	15.25	6560	13.66	0.34	0	1310	53.2	27.08
Ohai	Solid Energy	18.3	4.3	34.4	43.0	24.11	10370	22.77	0.28	0	1190	44.4	31.12
Waituna	Southern Pastoral	39.6	5.5	31.0	23.9	14.53	6250	12.96	0.58	0	1200	56.5	26.47



About the Analysis Update

The Analysis Update provides a summary of Coal Association of New Zealand Inc. members' coal production. The sampling of industrial coal occurs at the point of production and is undertaken according to procedures laid down in International Standard ISO 1988:1975. The analytical methods used are those specified in International Standards. The analyses are expressed on the "as sampled at the mine" basis. Various sampling rounds have been carried out by CRL Energy over several years. The analyses show some degree of variability from sample to sample, due mainly to mining conditions and the weather. Reliable figures are normally obtained by averaging the results from recent years' sampling or by including data from mines that are monitoring coal quality on a regular basis. The data are a combination of samples taken and analysed by CRL Energy staff and data provided by mining companies, where they have had independent analysis carried out. It must be stressed that, as most mines produce more than one grade of coal, the analyses quoted in the report are intended to be independent of any particular grade. However, some analyses vary significantly with grade, so for more information please approach the supplier in question.

Glossary of Coal Properties

- Total Moisture** - Calculated from the weight loss of the coal (as sampled at the mine) when heated to 105°C in nitrogen until constant weight.
- Ash** - The weight percent of material remaining after the coal is completely incinerated in a furnace at 815°C.
- Volatile Matter** - The weight percent loss when the coal is heated in a reducing atmosphere (out of air contact) for seven minutes at 900°C.
- Fixed Carbon** - Calculated by subtracting the sum of moisture, ash and volatile matter from 100 percent.
- Gross Calorific Value** - (Also known as Gross Specific Energy or Higher Heating Value.) Calculated from the measured amount of heat released when the coal is burnt in excess oxygen in a bomb calorimeter under standard conditions. In New Zealand, the potential heat content of fuels is normally expressed as gross calorific value.
- Net Calorific Value** - (Also known as Net Specific Energy or Lower Heating Value.) Net calorific value accounts for the heat required to vaporise steam and represents the effective heat available.
- Sulphur** - Calculated from the measured amount of SO₂ released when the coal is combusted in excess oxygen in a tube furnace set to 1350°C.
- Crucible Swelling Number** - Assigned by comparing the shape of the coke button produced when the coal is heated in a lidded silica crucible to 820°C for a minimum of 2.5 minutes against a standard set of profiles. 0 = no swelling, 9 = high swelling.
- Ash Fusion Temperature - Hemi (AFT)** - The temperature at which controlled heating under reducing conditions causes sufficient softening to change a moulded pyramid shaped ash pellet to a hemispherical shape (height equal to half the base).
- Dry Ash Free Values** - Dry ash free values for Volatile Matter and Calorific Value have been included because they are useful in understanding the differences in coal rank and properties.

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Associate Membership of the Coal Association of New Zealand

Did you know that you can join the Coal Association, even if you are not a coal producer, by becoming an Associate Member?

Why should you join?

The Coal Association needs the support of Associate Members more than ever, so that New Zealanders can retain access to the plentiful and economic fuel coal. Your support is vital, as the Association attempts to reduce the impact of economic measures, designed to help meet New Zealand's Kyoto Protocol obligations. As an Associate Member, you can keep up to date with happenings in the energy industry by reading the Coal Newsletter, which is sent out quarterly, and the Annual Review, which every Associate Member receives with an invitation to the Annual General Meeting.

Other benefits of Associate Membership are:

- opportunities to participate in Coal Association activities;
- opportunities to make your voice heard through Coal Assn initiatives;
- free access to information held by CRL Energy Ltd;
- free short consultations with CRL Energy staff; and
- free updates of recently published coal information.

What does it cost?

An annual fee of \$350 +GST.

How do I join?

Ring the Association Secretary at CRL Energy Ltd on Tel: (04) 570 3715 for the details.