



# Carbonisation Report

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/EXP236 - NZCC

*Report Number: 45013502*

March 23, 2020



**ATTENTION:** Wil Nicoll  
**REPORT TO:** SGS New Zealand Ltd  
**REPORT ON:** EXP236 - NZCC  
**REPORT NUMBER:** 45013502  
**PREPARED BY:**

William Cash



## RESULT SUMMARY

Sample Details:

45013502-K1 EXP236 - NZCC

### Coking Conditions

	Gravity	
Charge Type		
Moisture Content	2.2	%
Bulk Density (dry)	827	kg/m <sup>3</sup>
Charge Width	470	mm
Coking Rate (to 900°C)	27.1	mm/h
Coking Rate (to Push)	24.2	mm/h
Final Centre Temperature	1050	°C

### Pilot Scale Coke Results

Coke Yield	72.7	%
Maximum Internal Gas Pressure	20.4	kPa
Maximum Wall Pressure	2.4	kPa
Mean Coke Size	49.5	mm
+60 M40	69.6	
+60 M10	7.1	
CRI	17.0	
CSR	67.1	



Ref No.: TQ20001638-001

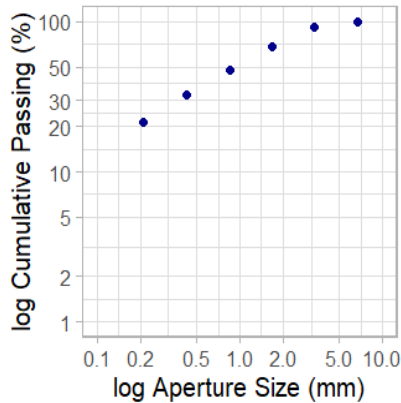
## PILOT SCALE CARBONISATION

**Sample Details:** 45013502-C1 EXP236 - NZCC

### Charge Preparation

Total Moisture of Charge 2.2 %  
 Oil Dosage 2.2 L/t  
 Size Analysis

Sieve Size (mm, square hole)	Cumulative Mass Passing
6.7	99.8 %
3.35	93.1 %
1.7	69.0 %
0.85	47.4 %
0.425	32.5 %
0.212	21.2 %
Coefficient of the log distribution	0.5



### Coking Conditions

Coal Received	25/02/2020
Date of Charge	10/03/2020
Charge Type	Gravity
Initial Flue Temperature	850 °C
Final Coke Temperature (at centre of charge)	1050 °C
Charge Width	470 mm
Coking rate to 900°C (at centre of charge)	27.1 mm/h
Coking rate to push	24.2 mm/h
Oven bulk density (dry basis)	827 kg/m <sup>3</sup>
ASTM bulk density (dry basis)	784 kg/m <sup>3</sup>



Ref No.: TQ20001638-002

## PILOT SCALE CARBONISATION

Sample Details: 45013502-K1 EXP236 - NZCC

### Coke Size Analysis

Yield		72.7	%	db
Stabilisation (number of drops from 3.6m)		3		
Sieve Size (mm, square hole)		Cumulative Mass Retained		
	125.0	0.0	%	
	106.0	1.5	%	
	75.0	8.0	%	
	50.0	48.8	%	
	25.0	88.7	%	
	13.5	94.4	%	
Mean Coke Size		49.5	mm	



Ref No.: TQ20001638-002

## PILOT SCALE CARBONISATION

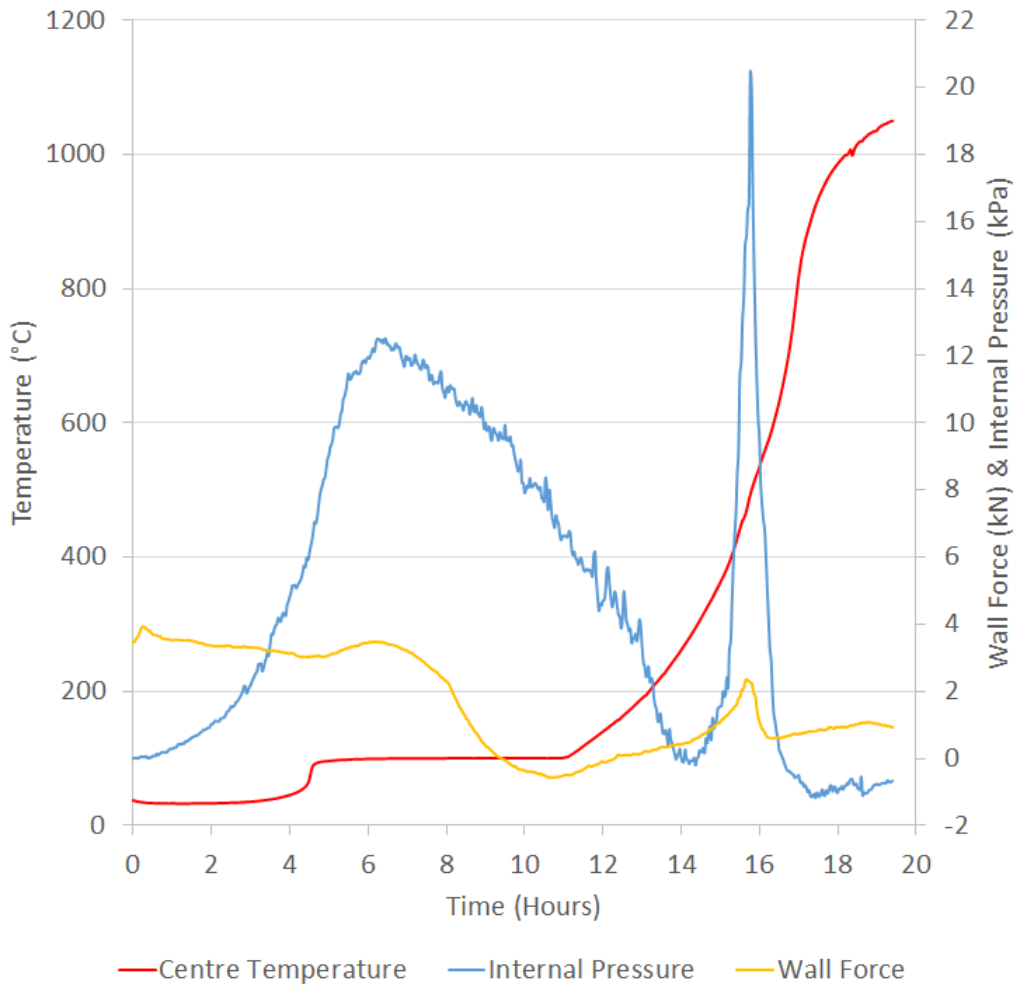
Sample Details: 45013502-K1 EXP236 - NZCC

### Coking Pressure

Maximum Wall Force	2.4	kN
Time (after charging)	15.7	h
Temperature (at centre of charge)	469	°C
Wall Surface Area	0.939	m <sup>2</sup>
Maximum Coking Pressure	2.3	kPa

### Internal Pressure

Maximum Internal Pressure	20.4	kPa
Time (after charging)	15.8	h
Temperature (at centre of charge)	493	°C





Ref No.: TQ20001638-002

## PILOT SCALE CARBONISATION

Sample Details: 45013502-K1 EXP236 - NZCC

	Result 1	Result 2	Mean
<b>+60 mm Micum Drum Test</b>			
M <sub>40</sub> Index	68.5	70.7	69.6
M <sub>10</sub> Index	7.2	7.0	7.1
<b>Reactivity of Coke to Carbon Dioxide</b>			
Coke Reactivity Index, CRI	17.2	16.8	17.0
Coke Strength After Reaction, CSR	67.7	66.6	67.1



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## TESTING STANDARDS

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CBM-C004	Stabilisation, sizing and composition of coke test samples*
ISO 566	Half-tonn drum test*
ISO 18894	Coke - Determination of coke reactivity index and coke strength after reaction*

*This is final confirmation of the analysis performed on the above mentioned samples*

*'Analysis performed by ALS Coal Brisbane Laboratory*

*All other test work performed by ALS Coal Ipswich Laboratory*

*\*NATA Accreditation does not cover the performance of this test*