

**COAL CONCEPTS PROFICIENCY TESTING**

**PARTICLE SIZE DISTRIBUTION**

**BULK SAMPLE PT**

**REPORT NUMBER 1-REV 01**

**Revised to include late submission**

Revision 00

**Final report**

**DATE ISSUED: 28 FEBRUARY 2021**

**LABORATORY CODE: 7h**

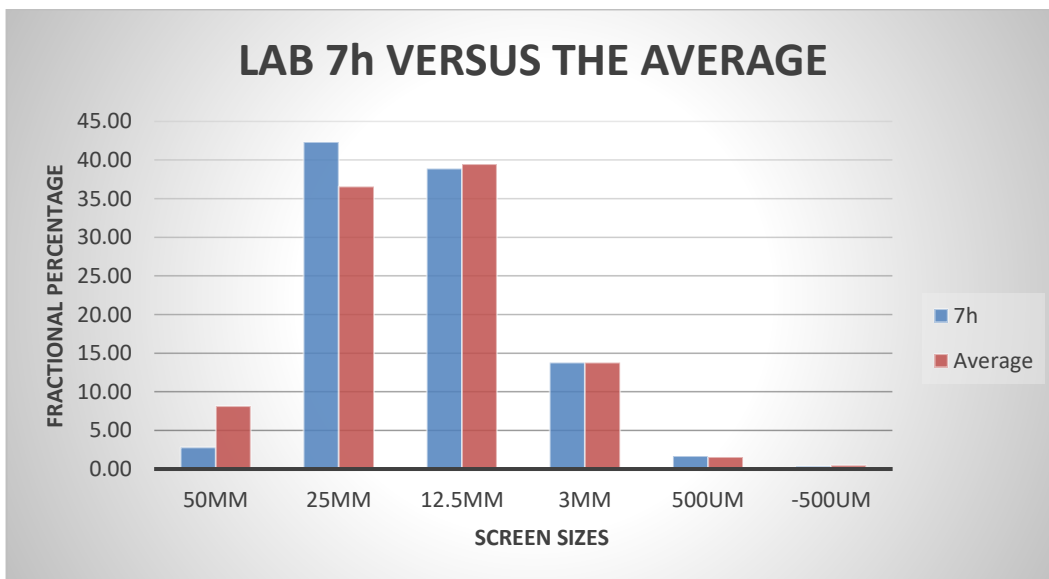


**SCHEME CO-ORDINATOR: R BABOOLAL**

**THINKING QUALITY, QUALITY THINKING**

## EXECUTIVE SUMMARY

1. Seven samples were sent to participants with 7 timeous result submitted back
2. Due to data limitation, iterative calculations could not be applied.
3. All laboratories performed well considering the high possibility of errors throughout the PSD analytical process as well as the sample preparation from the initial stages to the final test sample.
4. No Outliers were detected on ISO Ash and Calorific value determination
5. Below is a summarised graphical representation of your laboratory z-scores per mass percentage fraction as well as your laboratory results versus the mean results.



## TABLE OF CONTENTS

ITEM	PAGE NUMBER
Letter to participant	4
List of participants	5
Preparation of sample	6
Homogeneity and stability check	6
Results	6
Mass based comparisons	6
Percentage by mass comparisons	6
Graph of percentage-based comparisons	7
Z-scores	7
Ash results	7
Calorific value results	8
Conclusions	8
Terms and conditions	9

Dear Participant

**RE: PROFICIENCY TESTING RESULTS FOR THE MONTH OF FEBRUARY 2021**

Thank you for your participation in the Coal Concepts proficiency testing scheme.

Your laboratory code is **as per the cover page**

Analysis results have been reported on air dry and dry base where applicable. The dry base results have been used to calculate the z-scores.

Please take note of the following:

1. Z-scores between -1 and +1 is deemed acceptable
2. Z-scores between -2 and -3 should serve as a warning that the analysis result could get worse
3. Z-scores between +2 and +3 should also serve as a warning that analysis results could get worse.
4. Z- scores lower than -3 and exceeding +3 should warrant an investigation

Please find results attached together with Z-score results.

Best Regards

R Baboolal

**LIST OF PARTICIPANTS**

1. Coal Concepts
2. SABS Richards Bay
3. SABS Newcastle
4. Ronewa laboratory
5. Sibonisiwe laboratory services
6. SPTE Laboratory
7. UIS Analytical Services

### 1. PREPARATION OF SAMPLE

Approximately 300kg's of sample with an approximate toptsize of 50mm was sourced. The sample was split in a manner such that any breakage occurred will be equal amongst the splits. Seven such splits were obtained.

### 2. HOMOGENEITY CHECK & STABILITY CHECK

Homogeneity and stability could not be established due to the technical nature of the PT program, however, the size of the sample utilised, and the limited number of participants, was used to negate any effects of inhomogeneity and/or instability.

### 3. RESULTS

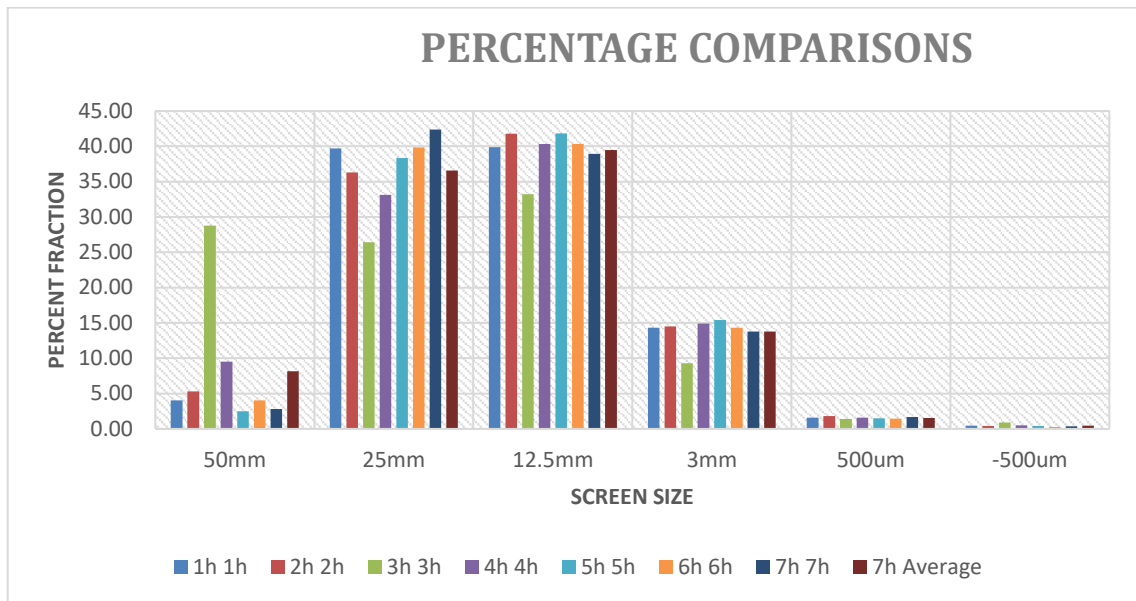
#### 3.1 Mass based result comparisons

	<b>MASS BASED RESULTS (Kg)</b>						
Lab code	1h	2h	3h	4h	5h	6h	7h
Screen size							
50mm	2.02	2.83	16	4.75	1.34	2.08	1.50
25mm	19.78	19.361	14.7	16.55	20.45	20.62	22.60
12.5mm	19.86	22.25	18.45	20.15	22.29	20.90	20.76
3mm	7.14	7.69	5.15	7.45	8.21	7.43	7.36
500um	0.79	0.93	0.80	0.80	0.79	0.75	0.90
-500um	0.21	0.21	0.5	0.25	0.23	0.15	0.20
<b>Sub Total</b>	<b>49.80</b>	<b>53.27</b>	<b>55.60</b>	<b>49.95</b>	<b>53.31</b>	<b>51.94</b>	53.32
<b>Loss</b>	<b>0.15</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>0.41</b>	<b>NC</b>	0.04
<b>Total</b>	<b>49.95</b>	<b>NC</b>	<b>NC</b>	<b>NC</b>	<b>53.72</b>	<b>NC</b>	53.36

#### 3.2 Percentage by mass comparisons

<b>PERCENTAGE BASED COMPARISONS</b>									
Lab code	1h	2h	3h	4h	5h	6h	7h		
Screen size	1h	2h	3h	4h	5h	6h	7h	Average	Stdev
50mm	4.06	5.30	28.80	9.51	2.51	4.02	2.81	8.14	9.40
25mm	39.70	36.30	26.40	33.13	38.36	39.84	42.35	36.58	5.36
12.5mm	39.87	41.80	33.20	40.34	41.81	40.31	38.91	39.46	2.95
3mm	14.34	14.50	9.30	14.91	15.40	14.32	13.79	13.79	2.04
500um	1.58	1.80	1.40	1.60	1.48	1.44	1.69	1.57	0.14
-500um	0.45	0.40	0.90	0.50	0.43	0.29	0.37	0.48	0.20

### 3.3 Graph of percentage-based comparisons



### 3.4 Z-Scores

LAB CODE	Z-SCORES ACHIEVED						
	1h	2h	3h	4h	5h	6h	7h
50mm	-0.43	-0.30	2.20	0.15	-0.60	-0.44	-0.57
25mm	0.58	-0.05	-1.90	-0.64	0.33	0.61	1.08
12.5mm	0.14	0.79	-2.12	0.30	0.80	0.29	-0.19
3mm	0.27	0.35	-2.20	0.55	0.79	0.26	0.00
500um	0.07	1.61	-1.19	0.21	-0.63	-0.91	0.84
-500um	-0.14	-0.39	2.14	0.12	-0.24	-0.95	-0.54

### 3.5 Ash results

ASH DETERMINATION (%)				
Lab no.	MIAS	Ash %(AD)	Ash (DB)	Z-Score
1h	3.30	25.30	26.16	-0.53
2h	3.30	26.30	27.20	1.85
3h	3.00	25.70	26.49	0.23
4h	2.68	25.26	25.96	-1.01
5h	3.53	25.43	26.36	-0.07
7h	2.85	25.44	26.19	-0.48
Outliers	0	0	0	
Average	3.11	25.57	26.39	
Standard Deviation		0.39	0.43	

### 3.6 Calorific value results

CALORIFIC VALUE DETERMINATION (MJ/Kg)				
Lab Code	MIAS	CV %(AD)	CV (DB)	Z-Score
1h	3.30	23.36	24.16	-0.49
2h	3.30	23.02	23.81	-1.60
3h	3.00	24.00	24.74	1.36
4h	2.68	23.65	24.30	-0.03
5h	3.53	23.63	24.49	0.58
7h	2.85	23.67	24.36	0.17
Outliers		0	0	
Average	3.11	23.56	24.31	
Standard Deviation		0.33	0.32	

## 4. CONCLUSIONS

- 4.1 Suspect values on the mass and mass percentage results were not removed as these could be the actual content of the sample and the participant is given the benefit of any doubt.
- 4.2 Outlier checks using Grubb's estimate was carried on the Ash and Calorific value results. No outliers were detected.
- 4.3 The only extreme result on the mass and mass percentage results detected, was as follows:

50mm	2.02	2.83	16	4.75	1.34	2.08
------	------	------	----	------	------	------

50mm	4.06	5.30	28.80	9.51	2.51	4.02
------	------	------	-------	------	------	------

These results however were still within the acceptable z-score limits of -3 and +3

- 4.4 The acceptable Ash and Calorific value z-scores obtained, indicated that sample preparation was adequately carried out and no anomalies were detected.



## COAL CONCEPTS: Terms and Conditions

### Return of results:

Laboratories participate in proficiency testing programs on the understanding that they will be sharing their results and information **anonymously** with other laboratories performing the same analysis. No return of results compromises the spirit of the programs, and reports will not be sent to laboratories unless they return results. Payment in full is required from all laboratories enrolling whether they return results or not.

### Errors in Participant Proficiency Testing Results:

Proficiency testing reports should reflect the level of accuracy that a regular testing client would receive.

If a participant finds an error in their proficiency testing results, they may notify us in writing and change their submission **PRIOR** to the due date for return. Changes after this time will not be accepted.

Coal Concepts' reports results *as submitted* by participants.

On occasion, it seems as though participants have mixed up the samples or not processed the samples according to the instructions. Coal Concepts cannot make assumptions of this nature and change results 'to suit'. We also cannot compromise the integrity of the programs by suggesting to some participants that they should review their results prior to the due date. (This is unfair to other participants) It is the responsibility of the participants to check all aspects of the program, including sample identification, preparation, testing instructions, calculations and reporting of the results prior to results submission.

If samples are not in good condition on arrival to the participant laboratory, Coal Concepts must be notified in writing IMMEDIATELY, as often samples can be replaced in good time. Claims about samples received in bad condition will not be accepted after the report has been issued.

### Late Enrolments and Late Results:

Late enrolment requests cannot always be accommodated, as sample manufacture must be scheduled well in advance to the shipping date of the program to allow all necessary quality assurance activities to be carried out.

Shipping of PT materials and evaluating test results from PTPs out of cycle with the mainstream programs is considerably time consuming and therefore costly.

In order not to disadvantage participants able to comply with time frames, Coal Concepts may charge a late fee in the following circumstances:

Requests that Coal concepts staff enters results on behalf of participants

Requests to record results after the due date

Requests for PTP participation that is out of cycle with the scheduled dates

### Shipping fees and Customs clearance:

Costs incurred for shipping samples and clearance of same through customs are the responsibility of the participating laboratory unless otherwise indicated

### Non-payment of fees:

Coal Concepts retains the right to withhold reports and/or test materials and services when invoices are outstanding.

### Confidentiality of results:

All data and information received by Coal Concepts from its clients are considered confidential unless the client has given express permission to pass on information.

### Definitions:

The dictionary definitions of "collusion" and "falsification" are as follows.

· *Collusion*: A secret agreement or cooperation for a fraudulent or deceitful purpose.

· *Falsification*: Deliberately changing something to be false. In proficiency testing terms, collusion is comparing data (and perhaps changing data) to fit in with a believed "correct" result. This is contrary to the spirit of proficiency testing programs, which are issued with the intention of providing an objective comparison of a laboratory's performance with others. Coal Concepts tries to minimise the occurrence of collusion by being aware that laboratories should be objective when they report their results, and should therefore not know the intended results at the time they are reporting to us.

Answers are not provided to clients until results have been submitted.

To prevent collusion and falsification our advice to clients is:

DON'T confer with others about PT samples or results.

DO accept the fact that everyone makes errors.

DON'T average the results or opinions of every person in the laboratory before selecting the answer to be submitted. Instead, use one of the answers AS SUBMITTED to you and take advantage of the Coal Concepts internal QA services and submit all answers generated by the technicians.

DO have confidence in your own results.

Proficiency Testing (PT) is a compulsory part of laboratory accreditation, but it is also an important tool for giving you confidence in your results.

"Enhancing" your PT results with assistance from another participant cannot increase confidence in your laboratory's performance.

Coal concepts' testing staff are not told what the expected results are, nor what we are expecting.

We subject ALL results to analysis, even if they are different.

The staff have the right to check that the results we enter on their behalf are correctly transcribed.

Clients are always welcome to contact Coal Concepts to seek advice or information about collusion or falsification of data.

### Policy for Participant Appeal of PT Performance Assessment:

If participants disagree with their performance assessment in a proficiency report, they should inform Coal Concepts in writing.

The response will include Coal Concepts interpretation of the outcome of the reassessment and an explanation of that outcome. (For example, explanation of a calculation, or the rationale for the outcome of the evaluation.)

If a mistake has been made by Coal Concepts, it will be dealt with via Coal Concepts' non-conformance system.

### Liability

In no event shall a party's liability to the other party for direct damages exceed an amount equal to the value of the amount for the PT Programme, under that specific month

### End of report