

COAL CONCEPTS PROFICIENCY TESTING

PARTICLE SIZE DISTRIBUTION

BULK SAMPLE PT

REPORT NUMBER 02

Revision 00

Final report

DATE ISSUED: 31 MARCH 2021

LABORATORY CODE: h



SCHEME CO-ORDINATOR: R BABOOLAL

THINKING QUALITY, QUALITY THINKING

EXECUTIVE SUMMARY

1. Six samples were sent to participants with 6 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.

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Dear Participant

RE: PROFICIENCY TESTING RESULTS FOR THE MONTH OF MARCH 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. ESKOM ERID
2. ESKOM Arnot
3. Bureau Veritas Inspectorate laboratories (Alton)
4. Cotecna Richards Bay
5. Morupule Coal Mine (Botswana)
6. Highveld Laboratory services

1. PREPARATION OF SAMPLE

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

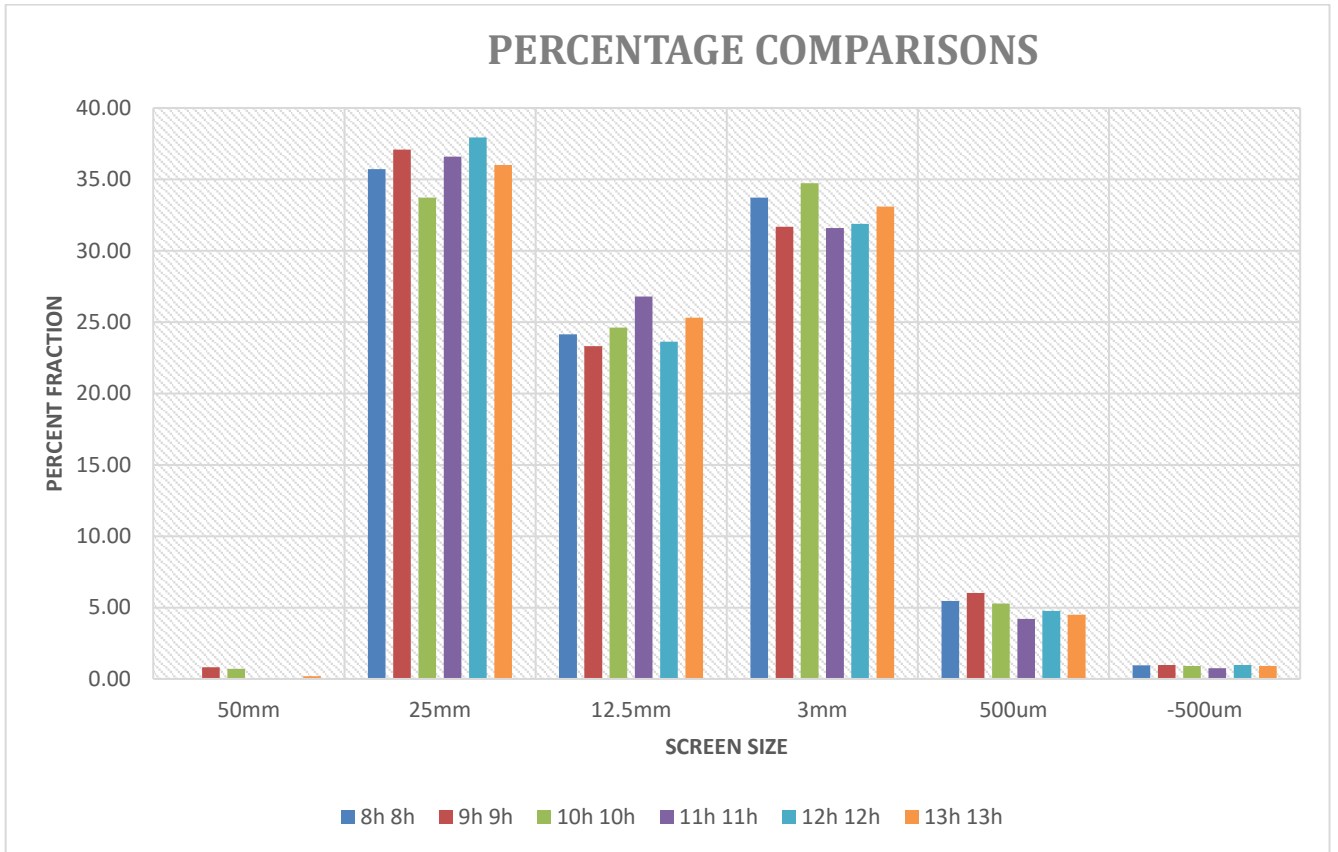
3.1 Mass based result comparisons

	MASS BASED RESULTS (Kg)					
Lab code	8h	9h	10h	11h	12h	13h
Screen size						
50mm	0	0.42	0.37	0	0	0.10
25mm	9.02	19.02	17.36	1.464	19.7	18.21
12.5mm	6.1	11.96	12.67	1.07	12.27	12.80
3mm	8.52	16.24	17.88	1.264	16.56	16.77
500um	1.38	3.09	2.72	0.17	2.47	2.27
-500um	0.24	0.5	0.47	0.03	0.51	0.42
Sub Total	25.26	51.23	51.47	4.00	51.51	50.57
Loss	NC	NC	NC	0.003	0.43	NC
Total	NC	NC	NC	NC	51.94	NC

3.2 Percentage by mass comparisons

PERCENTAGE BASED COMPARISONS								
Lab code	8h	9h	10h	11h	12h	13h		
Screen size	8h	9h	10h	11h	12h	13h	Average	Stdev
50mm	0.00	0.82	0.71	0.00	0.00	0.20	0.29	0.38
25mm	35.71	37.09	33.73	36.60	37.93	36.00	36.18	1.44
12.5mm	24.15	23.32	24.62	26.80	23.62	25.30	24.64	1.27
3mm	33.73	31.67	34.73	31.60	31.88	33.10	32.79	1.28
500um	5.46	6.03	5.29	4.20	4.76	4.50	5.04	0.68
-500um	0.95	0.98	0.92	0.75	0.98	0.90	0.91	0.09

3.3 Graph of percentage-based comparisons



3.4 Z-Scores

Z-SCORES ACHIEVED ON PSD						
LAB CODE	8h	9h	10h	11h	12h	13h
50mm	-0.76	1.40	1.11	-0.76	-0.76	-0.23
25mm	-0.32	0.64	-1.70	0.29	1.22	-0.12
12.5mm	-0.38	-1.03	-0.01	1.70	-0.80	0.52
3mm	0.74	-0.87	1.51	-0.92	-0.70	0.25
500um	0.62	1.46	0.37	-1.24	-0.41	-0.80
-500um	0.43	0.77	0.08	-1.90	0.77	-0.15

3.5 Ash results

ASH DETERMINATION (%)				
Lab no.	MIAS	Ash %(AD)	Ash (DB)	Z-Score
8h	2.39	25.69	26.32	-0.30
9h	3.87	24.72	25.72	-1.21
10h	2.68	26.55	27.28	1.14
11h				
12h				
13h	4	25.7	26.77	0.37
Outliers	0	0	0	
Average	3.24	25.67	26.52	
Standard Deviation		0.75	0.67	

3.6 Calorific value results

CALORIFIC VALUE DETERMINATION (MJ/Kg)				
Lab Code	MIAS	CV %(AD)	CV (DB)	Z-Score
8h	2.39	22.16	22.70	-0.90
9h	3.87	22.48	23.38	1.08
10h	2.68	22.13	22.74	-0.80
11h				
12h				
13h	4	22.3	23.23	0.62
Outliers		0	0	
Average	3.24	22.27	23.01	
Standard Deviation		0.16	0.34	

4. CONCLUSIONS

- 4.1 Some participants subdivided the 50kg sample submitted and carried out PSD on the subdivided portion. The entire 50kg sample was to be used.
- 4.2 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.
- 4.3 Outlier checks using Grubb's estimate was carried on the Ash and Calorific value results. No outliers were detected.
- 4.4 For the participants that submitted : 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 ConditionsReturn 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