



# COAL CONCEPTS PROFICIENCY TESTING GENERAL ANALYSIS SAMPLE

## REPORT – ONE HUNDRED AND FORTY

Revision 00

### Final report

DATE ISSUED 30 JUNE 2023

PARTICIPANT

**LABORATORY CODE: a**

**R BABOOLAL (SCHEME MANAGER)**

*Disclaimer: Opinions and interpretations expressed herein are outside the scope of SANAS accreditation  
\*Moisture in the analysis sample is not included in the SANAS schedule of accreditation as robust statistics cannot be applied.  
Chlorine, Fluorine, Quick ash, ASTM ash and ASTM Volatiles is not included in the scope of accreditation.*

**THINKING QUALITY, QUALITY THINKING**

REGISTRATION NUMBER: 2006/149731/23 (RMB INDUSTRIAL STATIONERS cc t/a)

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## EXECUTIVE SUMMARY

1. One hundred and fourteen samples were sent to participants with 110 results submitted timeously.
2. The total number of outliers detected were as follows (dry base):
  - ISO Ash x 2
  - Quick Ash x 1
  - Volatile matter x 2
  - Calorific value x 8
  - Total Sulphur x 9
  - Phos x 1
  - Carbon x 1
3. Chlorine, ASTM Ash, ASTM Volatile Matter participants were insufficient to apply robust statistical calculations.
4. Trending for your laboratory is as follows:

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Dear Participant

**RE: PROFICIENCY TESTING RESULTS FOR THE MONTH OF JUNE 2023**

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

Your laboratory code is as per the cover page.

All results are totally confidential. Any results in ***Bold, Italics and Underlined*** are outliers. Where applicable, the most extreme outliers have been eliminated from calculations using the Grubbs estimate for outliers. Robust statistics has been applied where possible. Analysis results have been reported on air dry and dry base. 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
5. Compare your result to the robust average which will be the assigned value. The measurement of uncertainty (UoM) of the results is also stated.
6. Z-Score calculations can be made available upon request

The Coal Concepts scheme adheres to the requirements of ISO/IEC 17043:2010 – Conformity assessment – General requirements for proficiency testing.

Statistical analysis has been carried out using ISO/IEC 13528:2022-Statistical methods for use in proficiency testing by interlaboratory comparisons.

Please find results attached together with Z-score trends.

Best Regards

R Baboolal

## LIST OF PARTICIPANTS

Afisam Dudfield	Mitra SK Richards Bay
Africoal	ML Coal
Afrisam Ulco	Moruple
AH Knight	Mfulawamanzi
Anglo Coal Goedeheop North Plant	Msobo Coal
Anglo Greenside (Thungela)	Nelson Mandela University
Anglo Landau	Noko Analytical laboratories (Witbank)
Aqua Specto	Noko NCC
ArcelorMittal VDP	Noko Ntshovelo
Best enough - 2 Seam	Noko Piet Retief
Best enough Laboratory -Witbank	Noko Welgemeend
Bestech Anthra Siding- Ermelo	Quality Ensure Eastide Lab - Shift A
Bestech Madini Mining Witbank	Quality Ensure Eastide Lab - Shift B
Bestech Vlakfontein Mine-Ogies	Richards Bay Minerals
Bestech Zomhlaba Resource Mine -Delmas	Ronewa Lab
Botswana Power Corp - B Power Station	Ronewa Lab Vele
Botswana Power Corporation - A Power Station	Ronewa Wescoal
Bureau Veritas Beira	SA Labs Ihtuba – Kangra
Bureau Veritas Inspectorate Laboratories - Alton	SA Labs Ihtuba – Khanye
Bureau Veritas Inspectorate Laboratories - Middelburg	SA Labs Ihtuba – Phalandwa
BV BELFAST	SA Labs Ihtuba – Ruvuma Coal LTD
BV Moatize	SA Labs Ihtuba – ZAC
BV Nacala	SABS CSIR
BV Tendele	SABS Newcastle (RETAINED SPRINGLAKES LAB CODE)
BVTISA -PTA	SABS Richards Bay
Castle Peak Power Station	SABS Secunda
CCIC Richards Bay	SABS Uitkomst
Coal Concepts Richards Bay Lab	Sappi
Cotecna Phola	SB Mining Solutions - Middelburg
Cotecna Lurco	Seriti Kriel Colliery
Cotecna Mimosa	Seriti New Denmark
Cotecna Nasonti	Seriti New Vaal
Cotecna OLF	Sibonisiwe Clewer
Cotecna Richards Bay Lab	Sibonisiwe Elandsfontein
Cotecna Tselentis	Sibonisiwe Middelburg
Cotecna Umbumbene DroogVallei	Sibonisiwe Ritvlei
Cotecna Middelburg	Sibonisiwe WCP
Ensayos técnicos Labmin SRL-Peru	Sibonisiwe Mzimkhulu
Eskom Arnot	Siza Arnotopco
Eskom Duvha	Siza Carolina
Eskom Erid	Siza Coal Services - Botswana
Eskom Erid TGA	Siza Coal Services - Kinross
Eskom Grootvlei	Siza Leeuwpan
Eskom Hendrina	Siza Middelburg
Eskom Kendal	Siza Minerals Lab - Gaborone
Eskom Kriel	Siza Mooiplaats
Eskom Lethabo	Siza NBC
Eskom Majuba	Siza Sasol
Eskom Matimba	Siza WestCoal
Eskom Matla	South 32 Khutala
Eskom Medupi	SPT
Eskom Tutuka	Tata Steel Wales - Europe
Exxaro Grootegeluk	Turkey ELI
Exxaro Matla	UAS
Fauji Fertilizer Bin Qasim Limited	UAS Main Lab
G & W Minerals	UAS Overlooked
General Directorate of Coal Enterprises of Turkey	UAS Sudor
Genet Inyanda	UAS Twistdraai
Genet Klipfontein	UAS VDD
Genet Welgelegen	UIS
Geoscience	Universal Geominerals Sdn Bhd - Malaysia
Glencore Boshhoek	Vitroviaan
Glencore Lion	Yildiz Labs - Turkey
Glencore Rustenburg	
Glencore Wonderkop	
HighVeld Lab	
Hwange Colliery	
Idwala Lime	
Imbally (Pty) Ltd	
Jindal Kiepersol	
Jindal Mozambique	
Jugoinspekt Belgrade AD Serbia	
Laboratory for solid fuels-Mining Institute Belgrade	
Labrite Lab	
Leon Testing Pakistan	
Mafube Coal	
Ministry of Energy and Mineral Resources - Kingdom of Jordan	
Mining and Metallurgy Institute Bor	

### 1. TYPE OF SAMPLE USED

The coal used in this proficiency testing round was bituminous coal.

### 2. PREPARATION OF SAMPLE

Approximately 1000kg's of coal with an approximate top size of 50mm was sourced. This was crushed to -4mm using a jaw crusher. The -4mm material was reduced to -212um using a cross beat pulveriser. The 212 material was sieved using a 212um screen. Any +212um material was pulverised and sieved until all material passed through the 212-um sieve.

All the -212um material was then mixed in a mixing drum for 4 hours.

### 3. HOMOGENEITY CHECK

There were 119 participants in this round, 10 portions of sample were randomly extracted. These were packaged in their final form i.e. in 200ml sample bottles. The bottles were labelled 1 to 10. The results were as follows:

SAMPLE NO.	TEST PORTION 1	TEST PORTION 2	sample av (Xt)	range (Wt)	range sqd
1	28,39	28,41	28,40	0,02	0,0004
2	28,44	28,32	28,38	0,12	0,0144
3	28,57	28,40	28,49	0,17	0,0289
4	28,49	28,66	28,58	0,17	0,0289
5	28,48	28,32	28,40	0,16	0,0256
6	28,64	28,38	28,51	0,26	0,0676
7	28,48	28,30	28,39	0,18	0,0324
8	28,45	28,40	28,43	0,05	0,0025
9	28,47	28,51	28,49	0,04	0,0016
10	28,45	28,40	28,43	0,05	0,0025
GENERAL AVERAGE			28,45		
STANDARD DEVIATION			0,064		
WITHIN SAMPLE STANDARD DEVIATION			0,101		
BETWEEN SAMPLE STANDARD DEVIATION			0,032		

The between sample standard deviation must be  $\leq 0.3 \times \sigma$

( $\sigma$  = std deviation for the proficiency assessment)

$\sigma = 0.569$  was used, which is the repeatability for ISO ash (Ash % > 10%)

Hence =  $0.569 \times 0.3 = 0.171$

**Since 0.032 < 0.171, the samples are homogenous.**

#### 4. STABILITY CHECK

Samples were retained for sales as reference material. Ten of them were randomly chosen for stability testing. In order for the proficiency testing samples to be declared stable the general average from the homogeneity check and that of the stability check the difference in the general average should not differ by more than 0.3 X precision.

This test has been carried out about a month after the samples were received by the participating laboratories.

SAMPLE NO.	TEST PORTION 1	TEST PORTION 2	sample av (Xt)	range (Wt)	range sqd
1	28,16	28,40	28,28	0,24	0,0576
2	28,34	28,34	28,34	0,00	0,0000
3	28,49	28,39	28,44	0,10	0,0100
4	28,52	28,40	28,46	0,12	0,0144
5	28,34	28,18	28,26	0,16	0,0256
6	28,39	28,12	28,26	0,27	0,0729
7	28,35	28,23	28,29	0,12	0,0144
8	28,51	28,29	28,40	0,22	0,0484
9	28,33	28,32	28,33	0,01	0,0001
10	28,33	28,35	28,34	0,02	0,0004
GENERAL AVERAGE			28,34		
STANDARD DEVIATION			0,073		
WITHIN SAMPLE STANDARD DEVIATION			0,110		
BETWEEN SAMPLE STANDARD DEVIATION			0,028		

( $\sigma = 0.569$  was used)

**For this report  $0.3 \times 0.569 = 0.171$**

**Absolute value of  $(28.34 - 28.45) = 0.110$**

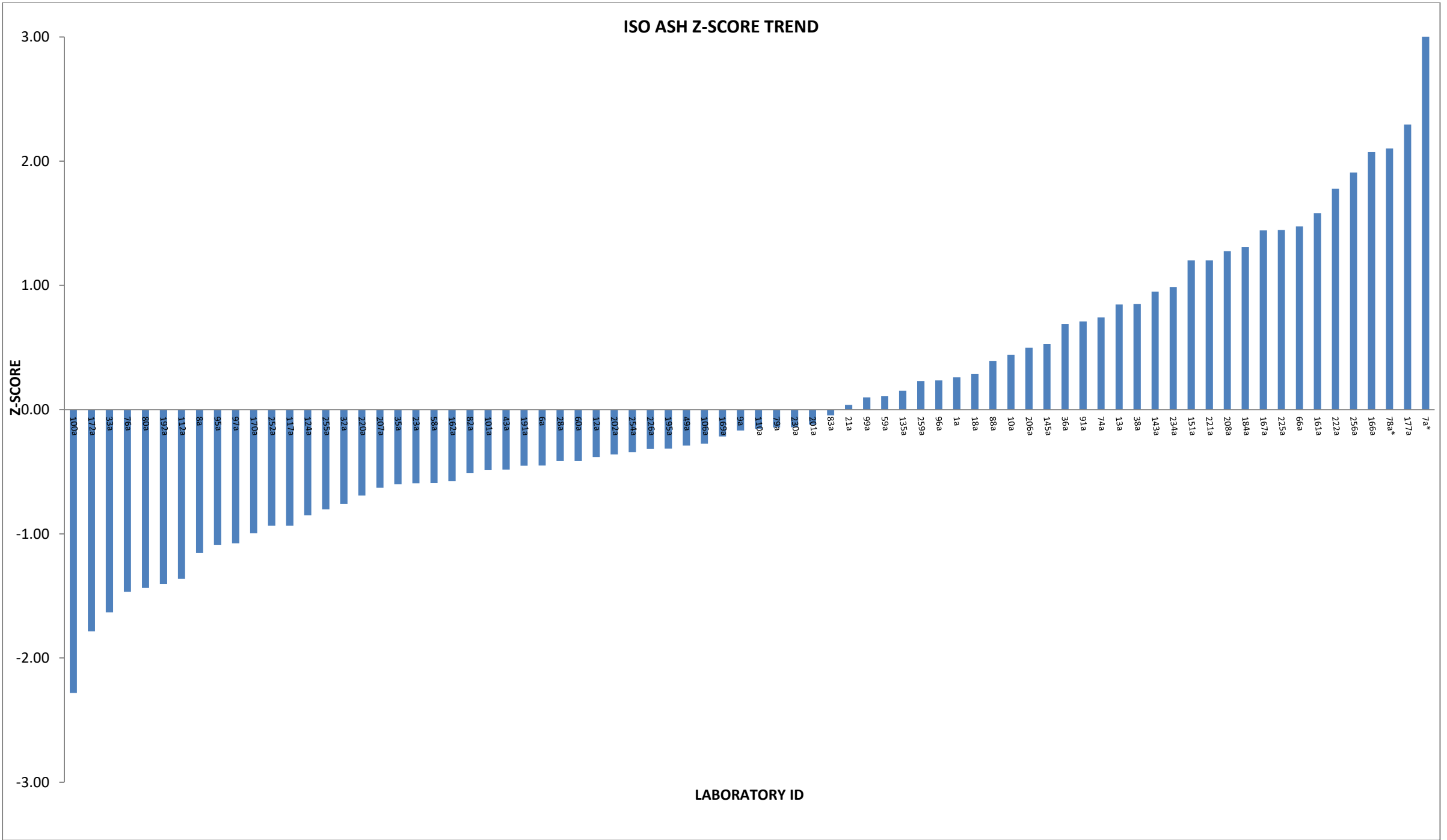
**Since  $0.110 < 0.171$  the proficiency testing samples were stable**

## COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023

## ANALYTICAL PARAMETER: ISO ASH (%)

	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY (%)	DRY BASE (%)	Z-SCORE (DRY BASE)
	1a	3,71	28,94	30,06	0,26
	6a	2,96	28,96	29,84	-0,45
	<b>7a*</b>	4,09	<b>29,92</b>	<b>31,20</b>	<b>4,10</b>
	8a	4,50	28,30	29,63	-1,15
	9a	4,10	28,70	29,93	-0,17
	10a	4,38	28,79	30,11	0,44
	12a	4,90	28,40	29,86	-0,38
	13a	4,53	28,86	30,23	0,85
	18a	4,20	28,80	30,06	0,29
	21a	4,63	28,60	29,99	0,04
	23a	4,60	28,43	29,80	-0,59
	28a	4,20	28,60	29,85	-0,41
	32a	4,61	28,38	29,75	-0,76
	33a	3,70	28,40	29,49	-1,63
	35a	4,29	28,52	29,80	-0,60
	36a	4,38	28,86	30,18	0,69
	38a	4,40	28,90	30,23	0,85
	43a	3,80	28,70	29,83	-0,48
	49a	4,52	28,54	29,89	-0,29
	58a	4,20	28,55	29,80	-0,59
	59a	3,83	28,86	30,01	0,11
	60a	4,20	28,60	29,85	-0,41
	66a	4,00	29,20	30,42	1,48
	74a	4,30	28,90	30,20	0,74
	76a	4,20	28,30	29,54	-1,47
	<b>78a*</b>	1,84	<b>30,04</b>	30,60	2,10
	79a	4,09	28,71	29,93	-0,14
	80a	4,50	28,22	29,55	-1,44
	82a	3,67	28,73	29,82	-0,51
	83a	4,45	28,63	29,96	-0,05
	88a	4,55	28,73	30,09	0,39
	91a	4,60	28,80	30,19	0,71
	95a	4,90	28,20	29,65	-1,09
	96a	2,82	29,20	30,05	0,24
	97a	4,44	28,34	29,66	-1,08
	99a	4,42	28,68	30,01	0,10
	100a	3,27	28,34	29,30	-2,28
	101a	4,60	28,46	29,83	-0,49
	106a	4,00	28,70	29,90	-0,27
	110a	3,88	28,77	29,93	-0,15
	112a	4,30	28,30	29,57	-1,36
	117a	3,70	28,60	29,70	-0,94
	124a	4,15	28,49	29,72	-0,85
	135a	3,64	28,93	30,02	0,15
	143a	4,99	28,75	30,26	0,95
	145a	4,13	28,89	30,13	0,53
	151a	4,40	29,00	30,33	1,20
	161a	4,10	29,20	30,45	1,58
	162a	3,71	28,70	29,81	-0,58
	166a	4,68	29,16	30,59	2,07
	167a	3,64	29,30	30,41	1,44
	169a	3,42	28,89	29,91	-0,22
	170a	3,81	28,55	29,68	-1,00
	172a	4,23	28,20	29,45	-1,79
	177a	4,47	29,29	30,66	2,29
	184a	4,50	29,00	30,37	1,31
	191a	4,50	28,50	29,84	-0,45
	192a	4,60	28,20	29,56	-1,40
	195a	4,43	28,56	29,88	-0,31
	201a	4,68	28,54	29,94	-0,12
	202a	4,62	28,49	29,87	-0,36
	206a	4,40	28,80	30,13	0,50
	207a	4,60	28,42	29,79	-0,63
	208a	4,80	28,90	30,36	1,28
	220a	4,27	28,50	29,77	-0,69
	221a	4,40	29,00	30,33	1,20
	222a	3,30	29,50	30,51	1,78
	225a	4,30	29,10	30,41	1,45
	226a	4,56	28,52	29,88	-0,32
	230a	3,19	28,98	29,93	-0,14
	234a	4,20	29,00	30,27	0,99
	252a	4,44	28,38	29,70	-0,94
	254a	4,10	28,65	29,87	-0,34
	255a	4,50	28,40	29,74	-0,80
	256a	6,01	28,71	30,55	1,91
	259a	4,61	28,66	30,05	0,23
<b>Number of results</b>	-	<b>76</b>	<b>76</b>	<b>76</b>	-
<b>OUTLIERS</b>	-	-	<b>2</b>	<b>1</b>	-
<b>AVERAGE</b>	-	<b>4,21</b>	<b>28,70</b>	<b>29,98</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,29</b>	<b>0,30</b>	-
<b>MEDIAN</b>	-	-	<b>28,70</b>	<b>29,93</b>	-
<b>%RSD</b>	-	-	<b>1,02</b>	<b>0,99</b>	-
<b>ROBUST AVERAGE</b>	-	-	<b>28,69</b>	<b>29,98</b>	-
<b>ROBUST STD DEVIATION</b>	-	-	<b>0,32</b>	<b>0,33</b>	-
<b>UoM</b>			<b>0,05</b>	<b>0,05</b>	-

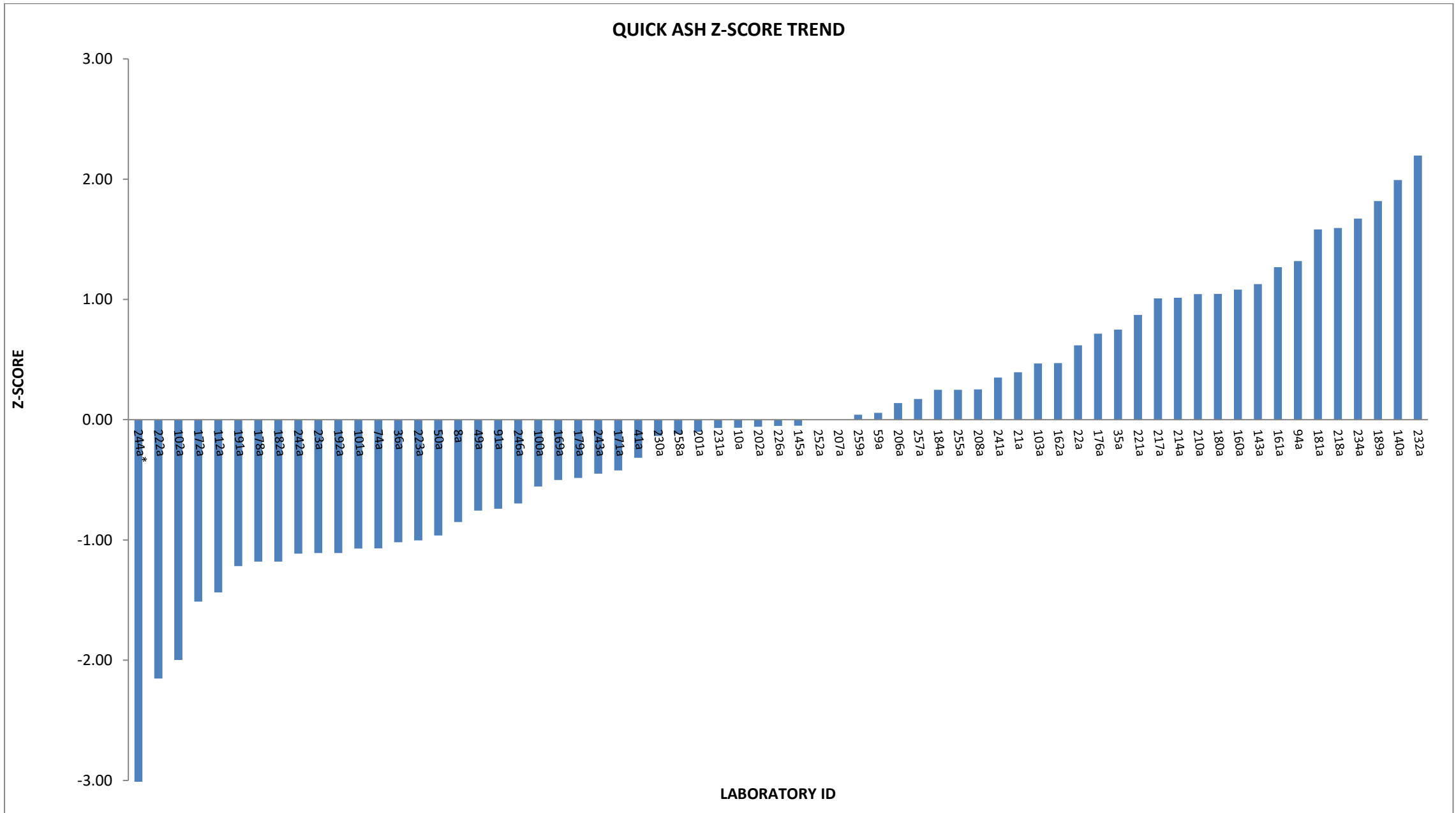




## COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023

## ANALYTICAL PARAMETER: QUICK ASH (%)

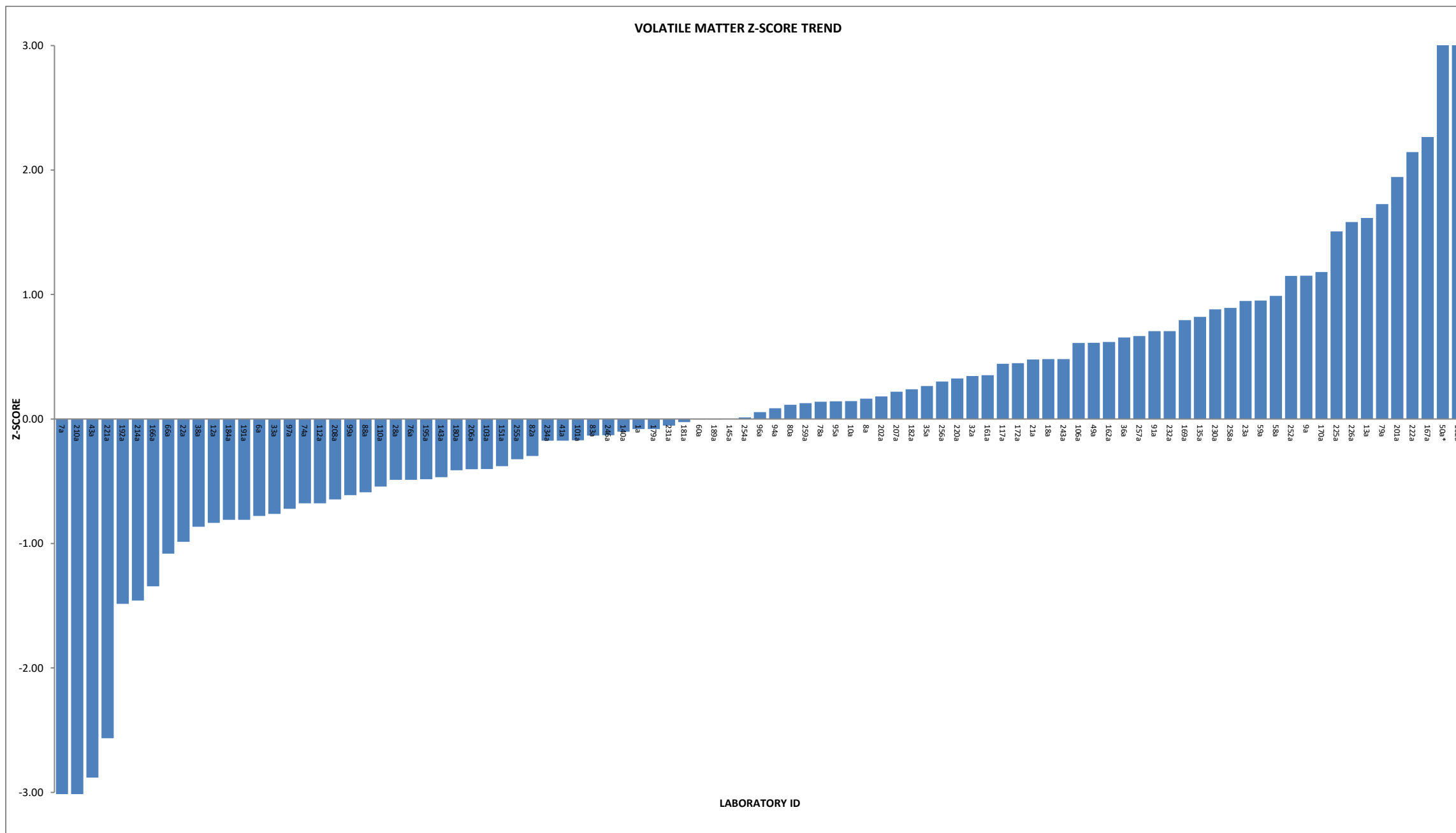
LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY (%)	DRY BASE (%)	Z-SCORE (DRY BASE)	
8a	4,50	28,60	29,95	-0,85	
10a	4,38	28,85	30,17	-0,07	
21a	4,63	28,90	30,30	0,39	
22a	3,91	29,18	30,37	0,62	
23a	4,60	28,50	29,87	-1,11	
35a	4,29	29,10	30,40	0,75	
36a	4,38	28,59	29,90	-1,02	
41a	4,42	28,77	30,10	-0,32	
49a	4,52	28,62	29,97	-0,76	
50a	3,83	28,77	29,92	-0,96	
59a	3,83	29,05	30,21	0,06	
74a	4,30	28,60	29,89	-1,07	
91a	4,60	28,60	29,98	-0,74	
94a	4,80	29,10	30,57	1,32	
100a	3,27	29,05	30,03	-0,56	
101a	4,60	28,51	29,88	-1,07	
102a	3,85	28,48	29,62	-2,00	
103a	3,74	29,19	30,32	0,47	
112a	4,30	28,50	29,78	-1,44	
140a	4,55	29,36	30,76	1,99	
143a	4,99	28,99	30,51	1,13	
145a	4,13	28,93	30,18	-0,05	
160a	4,26	29,20	30,50	1,08	
161a	4,10	29,30	30,55	1,27	
162a	3,71	29,20	30,33	0,47	
169a	3,42	29,02	30,05	-0,50	
171a	4,59	28,69	30,07	-0,42	
172a	4,23	28,50	29,76	-1,51	
176a	4,26	29,10	30,39	0,72	
178a	4,20	28,60	29,85	-1,18	
179a	4,50	28,70	30,05	-0,48	
180a	3,90	29,30	30,49	1,05	
181a	4,38	29,30	30,64	1,58	
182a	4,20	28,60	29,85	-1,18	
184a	4,50	28,90	30,26	0,25	
189a	4,20	29,42	30,71	1,82	
191a	4,50	28,50	29,84	-1,22	
192a	4,60	28,50	29,87	-1,11	
201a	4,68	28,75	30,16	-0,10	
202a	4,62	28,78	30,17	-0,06	
206a	4,40	28,90	30,23	0,14	
207a	4,60	28,80	30,19	0,00	
208a	4,80	28,81	30,26	0,25	
210a	4,26	29,19	30,49	1,04	
214a	4,20	29,20	30,48	1,01	
217a	4,26	29,18	30,48	1,01	
218a	4,26	29,34	30,65	1,59	
221a	4,40	29,10	30,44	0,87	
222a	3,30	28,60	29,58	-2,15	
223a	4,26	28,63	29,90	-1,00	
226a	4,56	28,80	30,18	-0,05	
230a	3,19	29,19	30,15	-0,14	
231a	3,98	28,97	30,17	-0,07	
232a	4,60	29,40	30,82	2,20	
234a	4,20	29,38	30,67	1,67	
241a	4,26	29,00	30,29	0,35	
242a	4,26	28,60	29,87	-1,11	
243a	4,20	28,80	30,06	-0,45	
<b>244a*</b>	4,26	<b>21,90</b>	<b>22,87</b>	<b>-25,63</b>	
246a	3,14	29,05	29,99	-0,70	
252a	4,44	28,85	30,19	0,00	
255a	4,50	28,90	30,26	0,25	
257a	4,10	29,00	30,24	0,17	
258a	4,50	28,80	30,16	-0,12	
259a	4,61	28,81	30,20	0,04	
<b>Number of results</b>	-	<b>65</b>	<b>65</b>	-	
<b>OUTLIERS</b>	-	-	<b>1</b>	-	
<b>AVERAGE</b>	-	<b>4,26</b>	<b>28,90</b>	<b>30,19</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,28</b>	<b>0,29</b>	-
<b>MEDIAN</b>	-	-	<b>28,90</b>	<b>30,18</b>	-
<b>%RSD</b>	-	-	<b>0,96</b>	<b>0,95</b>	-
<b>ROBUST AVERAGE</b>	-	-	<b>28,90</b>	<b>30,19</b>	-
<b>ROBUST STD DEVIATION</b>	-	-	<b>0,31</b>	<b>0,31</b>	-
<b>UoM</b>	-	-	<b>0,05</b>	<b>0,05</b>	-



## COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023

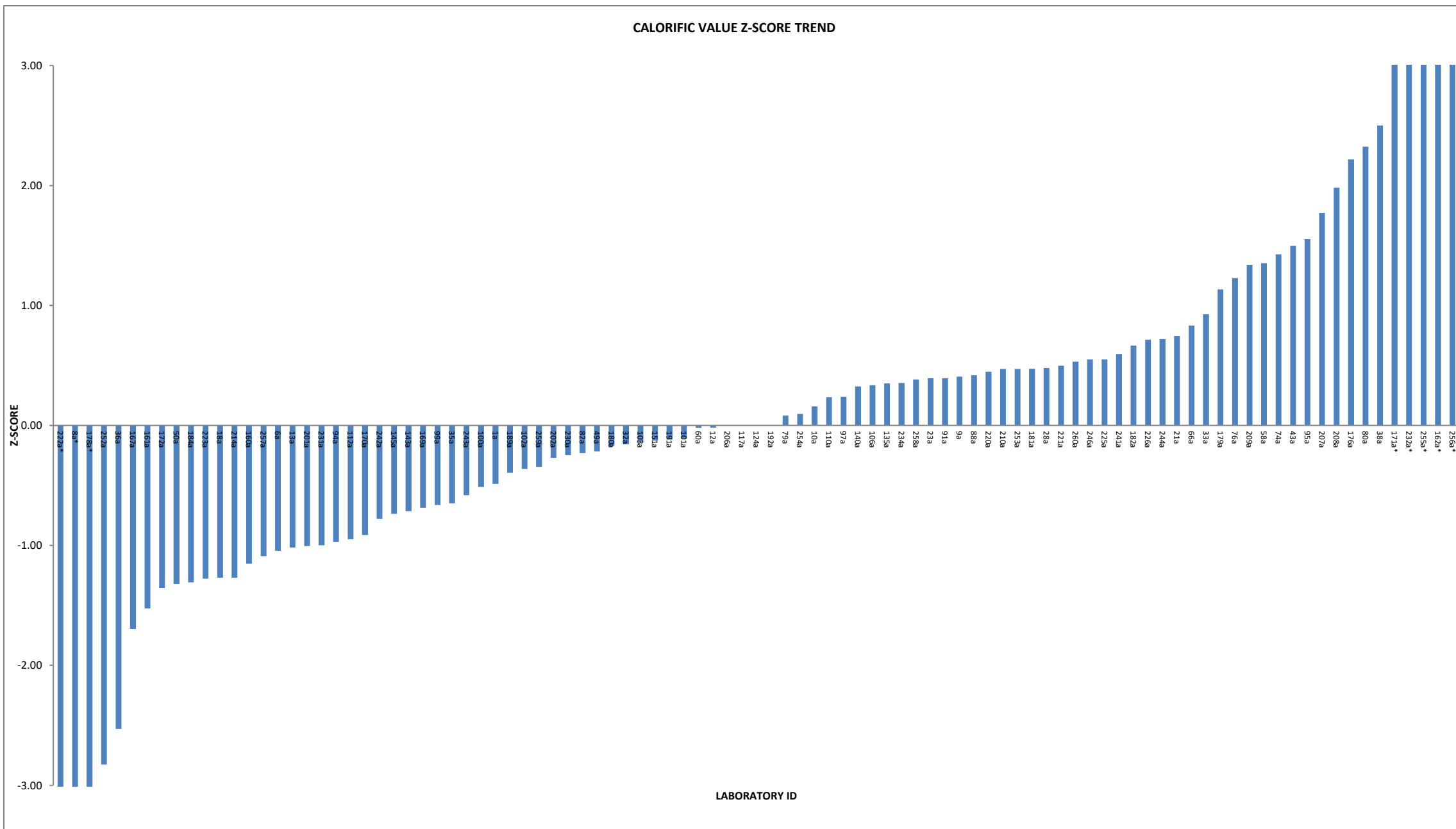
## ANALYTICAL PARAMETER: ISO VOLATILE MATTER (%)

LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
1a	3,71	21,98	22,83	-0,08
6a	2,96	21,86	22,53	-0,78
7a	4,09	20,60	21,48	-3,21
8a	4,50	21,90	22,93	0,16
9a	4,10	22,40	23,36	1,15
10a	4,38	21,92	22,92	0,14
12a	4,90	21,40	22,50	-0,83
13a	4,53	22,49	23,56	1,61
18a	4,20	22,10	23,07	0,48
21a	4,63	22,00	23,07	0,48
22a	3,91	21,56	22,44	-0,99
23a	4,60	22,20	23,27	0,95
28a	4,20	21,70	22,65	-0,49
32a	4,61	21,95	23,01	0,35
33a	3,70	21,70	22,53	-0,76
35a	4,29	21,99	22,98	0,26
36a	4,38	22,13	23,14	0,65
38a	4,40	21,50	22,49	-0,86
41a	4,42	21,78	22,79	-0,17
43a	3,80	20,80	21,62	-2,88
49a	4,52	22,08	23,13	0,61
<b>50a*</b>	3,83	<b>23,70</b>	<b>24,64</b>	<b>4,14</b>
58a	4,20	22,31	23,29	0,99
59a	3,83	22,38	23,27	0,95
60a	4,20	21,90	22,86	0,00
66a	4,00	21,50	22,40	-1,08
74a	4,30	21,60	22,57	-0,68
76a	4,20	21,70	22,65	-0,49
78a	1,84	22,50	22,92	0,14
79a	4,09	22,64	23,61	1,73
80a	4,50	21,88	22,91	0,11
82a	3,67	21,90	22,73	-0,30
83a	4,45	21,79	22,80	-0,13
88a	4,55	21,58	22,61	-0,59
91a	4,60	22,10	23,17	0,71
94a	4,80	21,80	22,90	0,09
95a	4,90	21,80	22,92	0,14
96a	2,82	22,24	22,89	0,05
97a	4,44	21,55	22,55	-0,72
99a	4,42	21,60	22,60	-0,61
101a	4,60	21,74	22,79	-0,17
<b>102a*</b>	3,85	<b>24,7</b>	<b>25,69</b>	<b>6,57</b>
103a	3,74	21,84	22,69	-0,40
106a	4,00	22,20	23,13	0,61
110a	3,88	21,75	22,63	-0,54
112a	4,30	21,60	22,57	-0,68
117a	3,70	22,20	23,05	0,44
135a	3,64	22,37	23,22	0,82
140a	4,55	21,78	22,82	-0,10
143a	4,99	21,53	22,66	-0,47
145a	4,13	21,92	22,86	0,00
151a	4,40	21,70	22,70	-0,38
161a	4,10	22,07	23,01	0,35
162a	3,71	22,27	23,13	0,62
166a	4,68	21,24	22,28	-1,34
167a	3,64	22,97	23,84	2,27
169a	3,42	22,41	23,20	0,79
170a	3,81	22,48	23,37	1,18
172a	4,23	22,08	23,06	0,45
179a	4,50	21,80	22,83	-0,08
180a	3,90	21,80	22,68	-0,41
181a	4,38	21,85	22,85	-0,03
182a	4,20	22,00	22,96	0,24
184a	4,50	21,50	22,51	-0,81
189a	4,20	21,90	22,86	0,00
191a	4,50	21,50	22,51	-0,81
192a	4,60	21,20	22,22	-1,49
195a	4,43	21,65	22,65	-0,48
201a	4,68	22,59	23,70	1,94
202a	4,62	21,88	22,94	0,18
206a	4,40	21,69	22,69	-0,40
207a	4,60	21,90	22,96	0,22
208a	4,80	21,50	22,58	-0,65
210a	4,20	20,64	21,54	-3,06
214a	4,20	21,30	22,23	-1,46
220a	4,27	22,02	23,00	0,33
221a	4,40	20,80	21,76	-2,57
222a	3,30	23,00	23,78	2,14
225a	4,30	22,50	23,51	1,51
226a	4,56	22,47	23,54	1,58
230a	3,19	22,50	23,24	0,88
231a	3,98	21,93	22,84	-0,05
232a	4,60	22,10	23,17	0,71
234a	4,20	21,83	22,79	-0,17
243a	4,20	22,10	23,07	0,48
246a	3,14	22,09	22,81	-0,13
252a	4,44	22,32	23,36	1,15
254a	4,10	21,93	22,87	0,01
255a	4,50	21,70	22,72	-0,32
256a	6,01	21,61	22,99	0,30
257a	4,10	22,20	23,15	0,67
258a	4,50	22,20	23,25	0,89
259a	4,61	21,86	22,92	0,13
NUMBER OF RESULTS	-	93	93	-
OUTLIERS	-	2	2	-
AVERAGE	4,20	21,90	22,86	-
STD DEVIATION	-	0,44	0,43	-
MEDIAN	-	21,90	22,87	-
%RSD	-	2,00	1,88	-
ROBUST AVERAGE	-	21,90	22,87	-
ROBUST STD DEVIATION	-	0,47	0,46	-
UoM	-	0,06	0,06	-



LABORATORY ID

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: CALORIFIC VALUE (MJ/kg)					
LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY (MJ/kg)	DRY BASE (MJ/kg)	Z-SCORE (DRY BASE)	
1a	3,71	20,60	21,39	-0,49	
6a	2,96	20,67	21,30	-1,04	
<b>8a*</b>	4,50	<b>19,32</b>	<b>20,23</b>	<b>-7,44</b>	
<b>9a</b>	4,10	20,66	21,54	0,41	
10a	4,38	20,56	21,50	0,16	
12a	4,90	20,42	21,47	-0,02	
13a	4,53	20,34	21,31	-1,02	
18a	4,20	20,37	21,26	-1,27	
21a	4,63	20,60	21,60	0,75	
23a	4,60	20,55	21,54	0,39	
28a	4,20	20,65	21,56	0,48	
32a	4,61	20,46	21,45	-0,16	
33a	3,70	20,83	21,63	0,93	
35a	4,29	20,45	21,37	-0,65	
36a	4,38	20,13	21,05	-2,53	
38a	4,40	20,93	21,89	2,50	
43a	3,80	20,90	21,73	1,50	
49a	4,52	20,47	21,44	-0,22	
50a	3,83	20,44	21,25	-1,32	
58a	4,20	20,79	21,70	1,35	
60a	4,20	20,57	21,47	-0,02	
66a	4,00	20,75	21,61	0,83	
74a	4,30	20,78	21,71	1,43	
76a	4,20	20,77	21,68	1,23	
79a	4,09	20,61	21,49	0,08	
80a	4,50	20,88	21,86	2,32	
82a	3,67	20,65	21,44	-0,23	
88a	4,55	20,57	21,55	0,42	
91a	4,60	20,55	21,54	0,39	
94a	4,80	20,29	21,31	-0,97	
95a	4,90	20,67	21,74	1,55	
97a	4,44	20,56	21,52	0,24	
99a	4,42	20,42	21,36	-0,66	
100a	3,27	20,69	21,39	-0,51	
101a	4,60	20,47	21,46	-0,11	
102a	3,85	20,59	21,41	-0,36	
103a	3,74	20,65	21,45	-0,14	
106a	4,00	20,67	21,53	0,33	
110a	3,88	20,68	21,51	0,24	
112a	4,30	20,40	21,32	-0,95	
117a	3,70	20,69	21,48	0,00	
124a	4,15	20,59	21,48	0,00	
135a	3,64	20,75	21,53	0,35	
140a	4,55	20,55	21,53	0,32	
143a	4,99	20,29	21,36	-0,72	
145a	4,13	20,47	21,35	-0,74	
151a	4,40	20,51	21,45	-0,13	
160a	4,24	20,38	21,28	-1,15	
161a	4,10	20,35	21,22	-1,53	
<b>162a*</b>	3,71	<b>21,82</b>	<b>22,66</b>	<b>7,09</b>	
167a	3,64	20,42	21,19	-1,70	
169a	3,42	20,63	21,36	-0,69	
170a	3,81	20,51	21,32	-0,91	
<b>171a*</b>	4,59	21,11	<b>22,13</b>	<b>3,89</b>	
172a	4,23	20,35	21,25	-1,35	
176a	4,24	20,92	21,85	2,22	
<b>178a*</b>	4,20	<b>19,60</b>	<b>20,46</b>	<b>-6,07</b>	
179a	4,50	20,69	21,66	1,13	
180a	3,90	20,61	21,45	-0,17	
181a	4,38	20,61	21,55	0,47	
182a	4,20	20,68	21,59	0,67	
184a	4,50	20,30	21,26	-1,31	
189a	4,20	20,51	21,41	-0,40	
191a	4,50	20,49	21,46	-0,12	
192a	4,60	20,49	21,48	0,00	
201a	4,68	20,31	21,31	-1,01	
202a	4,62	20,44	21,43	-0,27	
206a	4,40	20,53	21,47	0,00	
207a	4,60	20,77	21,77	1,77	
208a	4,80	20,76	21,81	1,98	
209a	4,70	20,68	21,70	1,34	
210a	4,24	20,64	21,55	0,47	
214a	4,20	20,37	21,26	-1,27	
220a	4,27	20,63	21,55	0,45	
221a	4,40	20,61	21,56	0,50	
<b>222a*</b>	3,30	<b>19,23</b>	<b>19,89</b>	<b>-9,50</b>	
223a	4,24	20,36	21,26	-1,28	
225a	4,30	20,64	21,57	0,55	
226a	4,56	20,61	21,59	0,71	
230a	3,19	20,75	21,43	-0,25	
231a	3,98	20,46	21,31	-1,00	
<b>232a*</b>	4,60	<b>21,25</b>	<b>22,27</b>	<b>4,78</b>	
234a	4,20	20,63	21,53	0,35	
241a	4,24	20,66	21,57	0,60	
242a	4,24	20,44	21,35	-0,78	
243a	4,20	20,48	21,38	-0,58	
244a	4,24	20,68	21,60	0,72	
246a	3,14	20,89	21,57	0,55	
252a	4,44	20,07	21,00	-2,83	
253a	4,24	20,64	21,55	0,47	
254a	4,10	20,61	21,49	0,09	
<b>255a*</b>	4,50	<b>21,30</b>	<b>22,30</b>	<b>4,95</b>	
<b>256a*</b>	6,01	<b>22,88</b>	<b>24,34</b>	<b>17,15</b>	
257a	4,10	20,42	21,29	-1,09	
258a	4,50	20,57	21,54	0,38	
259a	4,61	20,43	21,42	-0,35	
260a	4,61	20,57	21,56	0,53	
NUMBER OF RESULTS	-	97	97	-	
OUTLIERS	-	7	8	-	
AVERAGE	-	4,24	20,57	21,48	-
STD DEVIATION	-	-	0,18	0,17	-
MEDIAN	-	-	20,59	21,48	-
%RSD	-	-	0,86	0,78	-
ROBUST AVERAGE	-	-	20,57	21,48	-
ROBUST STD DEVIATION	-	-	0,19	0,18	-
UoM	-	-	0,02	0,02	-

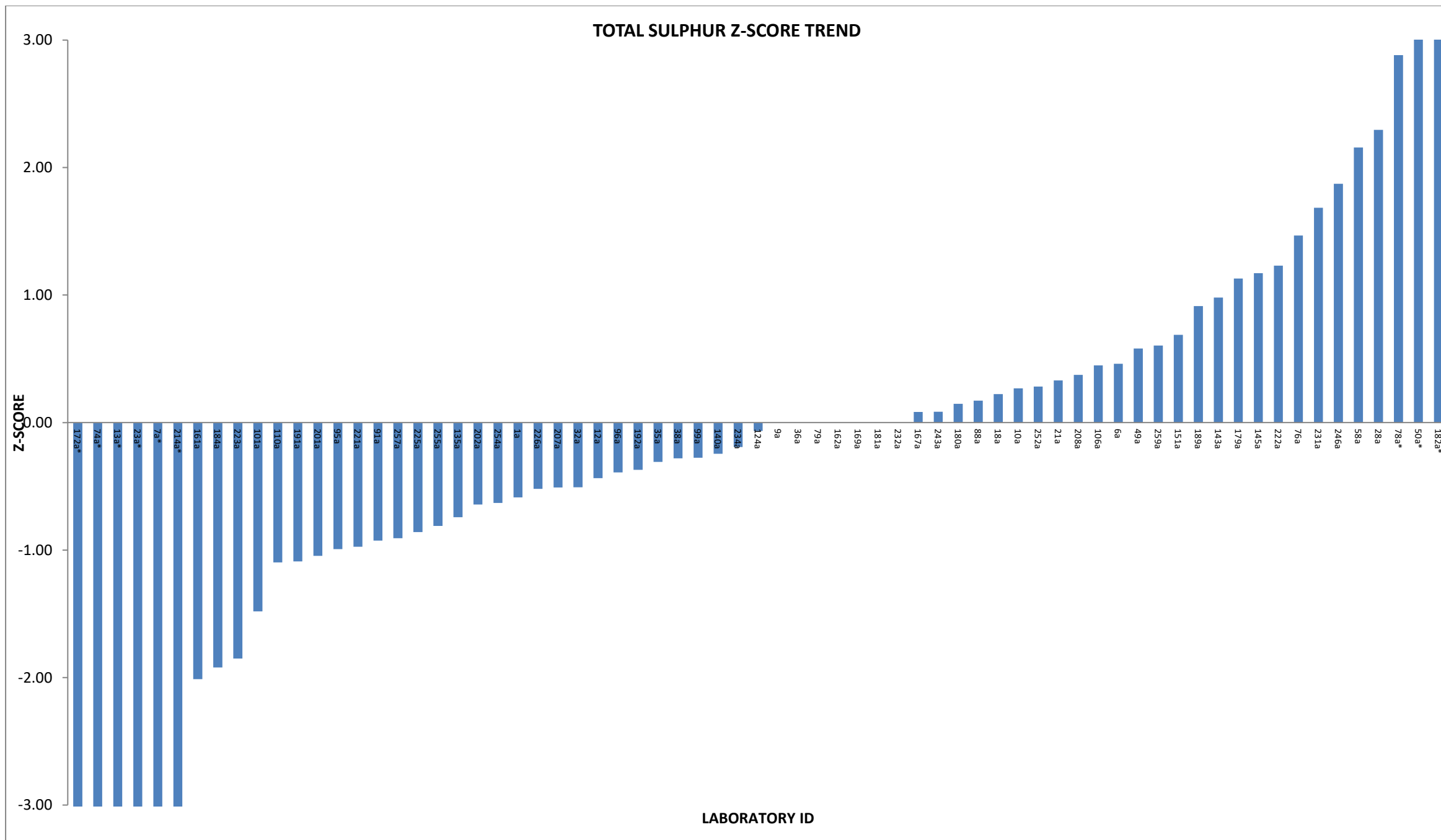


## COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023

## ANALYTICAL PARAMETER: TOTAL SULPHUR (%)

LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
1a	3,71	1,69	1,76	-0,59
6a	2,96	1,78	1,83	0,46
<b>7a*</b>	4,09	<b>1,37</b>	<b>1,43</b>	<b>-4,89</b>
9a	4,10	1,73	1,80	0,00
10a	4,38	1,74	1,82	0,27
12a	4,90	1,68	1,77	-0,44
<b>13a*</b>	4,53	<b>1,31</b>	<b>1,37</b>	<b>-5,66</b>
18a	4,20	1,74	1,82	0,22
21a	4,63	1,74	1,82	0,33
<b>23a*</b>	4,60	<b>1,35</b>	<b>1,42</b>	<b>-5,09</b>
28a	4,20	1,89	1,97	2,30
32a	4,61	1,68	1,76	-0,51
35a	4,29	1,70	1,78	-0,31
36a	4,38	1,72	1,80	0,00
38a	4,40	1,70	1,78	-0,28
49a	4,52	1,76	1,84	0,58
<b>50a*</b>	3,83	<b>2,15</b>	<b>2,24</b>	<b>5,78</b>
58a	4,20	1,88	1,96	2,16
<b>74a*</b>	4,30	<b>0,93</b>	<b>0,97</b>	<b>-10,96</b>
76a	4,20	1,83	1,91	1,47
<b>78a*</b>	1,84	<b>1,98</b>	2,02	2,88
79a	4,09	1,73	1,80	0,00
88a	4,55	1,73	1,81	0,17
91a	4,60	1,65	1,73	-0,93
95a	4,90	1,64	1,72	-0,99
96a	2,82	1,72	1,77	-0,39
99a	4,42	1,70	1,78	-0,28
101a	4,60	1,61	1,69	-1,48
106a	4,00	1,76	1,83	0,45
110a	3,88	1,65	1,72	-1,10
124a	4,15	1,72	1,79	-0,07
135a	3,64	1,68	1,74	-0,74
140a	4,55	1,70	1,78	-0,24
143a	4,99	1,78	1,87	0,98
145a	4,13	1,81	1,89	1,17
151a	4,40	1,77	1,85	0,69
161a	4,10	1,58	1,65	-2,01
162a	3,71	1,73	1,80	0,00
167a	3,64	1,74	1,81	0,08
169a	3,42	1,74	1,80	0,00
<b>172a*</b>	4,23	<b>0,91</b>	<b>0,95</b>	<b>-11,25</b>
179a	4,50	1,80	1,88	1,13
180a	3,90	1,74	1,81	0,15
181a	4,38	1,72	1,80	0,00
<b>182a*</b>	4,20	<b>2,49</b>	<b>2,60</b>	<b>10,59</b>
184a	4,50	1,58	1,65	-1,92
189a	4,20	1,79	1,87	0,91
191a	4,50	1,64	1,72	-1,09
192a	4,60	1,69	1,77	-0,37
201a	4,68	1,64	1,72	-1,05
202a	4,62	1,67	1,75	-0,64
207a	4,60	1,68	1,76	-0,51
208a	4,80	1,74	1,83	0,37
<b>214a*</b>	4,20	<b>1,38</b>	<b>1,44</b>	<b>-4,75</b>
221a	4,40	1,65	1,73	-0,97
222a	3,30	1,83	1,89	1,23
223a	4,20	1,59	1,66	-1,85
225a	4,30	1,66	1,73	-0,86
226a	4,56	1,68	1,76	-0,52
231a	3,98	1,85	1,93	1,68
232a	4,60	1,72	1,80	0,00
234a	4,20	1,71	1,78	-0,19
243a	4,20	1,73	1,81	0,08
246a	3,14	1,88	1,94	1,87
252a	4,44	1,74	1,82	0,28
254a	4,10	1,68	1,75	-0,63
255a	4,50	1,66	1,74	-0,81
257a	4,10	1,66	1,73	-0,91
259a	4,61	1,76	1,85	0,60
<b>NUMBER OF RESULTS</b>	<b>69</b>	<b>69</b>	<b>69</b>	<b>-</b>
<b>OUTLIERS</b>	<b>-</b>	<b>9</b>	<b>8</b>	<b>-</b>
<b>AVERAGE</b>	<b>4,20</b>	<b>1,72</b>	<b>1,80</b>	<b>-</b>
<b>MEDIAN</b>	<b>-</b>	<b>1,72</b>	<b>1,80</b>	<b>-</b>
<b>STD DEVIATION</b>	<b>-</b>	<b>0,07</b>	<b>0,08</b>	<b>-</b>
<b>%RSD</b>	<b>-</b>	<b>4,00</b>	<b>4,20</b>	<b>-</b>
<b>ROBUST AVERAGE</b>	<b>-</b>	<b>1,72</b>	<b>1,80</b>	<b>-</b>
<b>ROBUST STD DEVIATION</b>	<b>-</b>	<b>0,08</b>	<b>0,08</b>	<b>-</b>
<b>UoM</b>	<b>-</b>	<b>0,01</b>	<b>0,01</b>	<b>-</b>

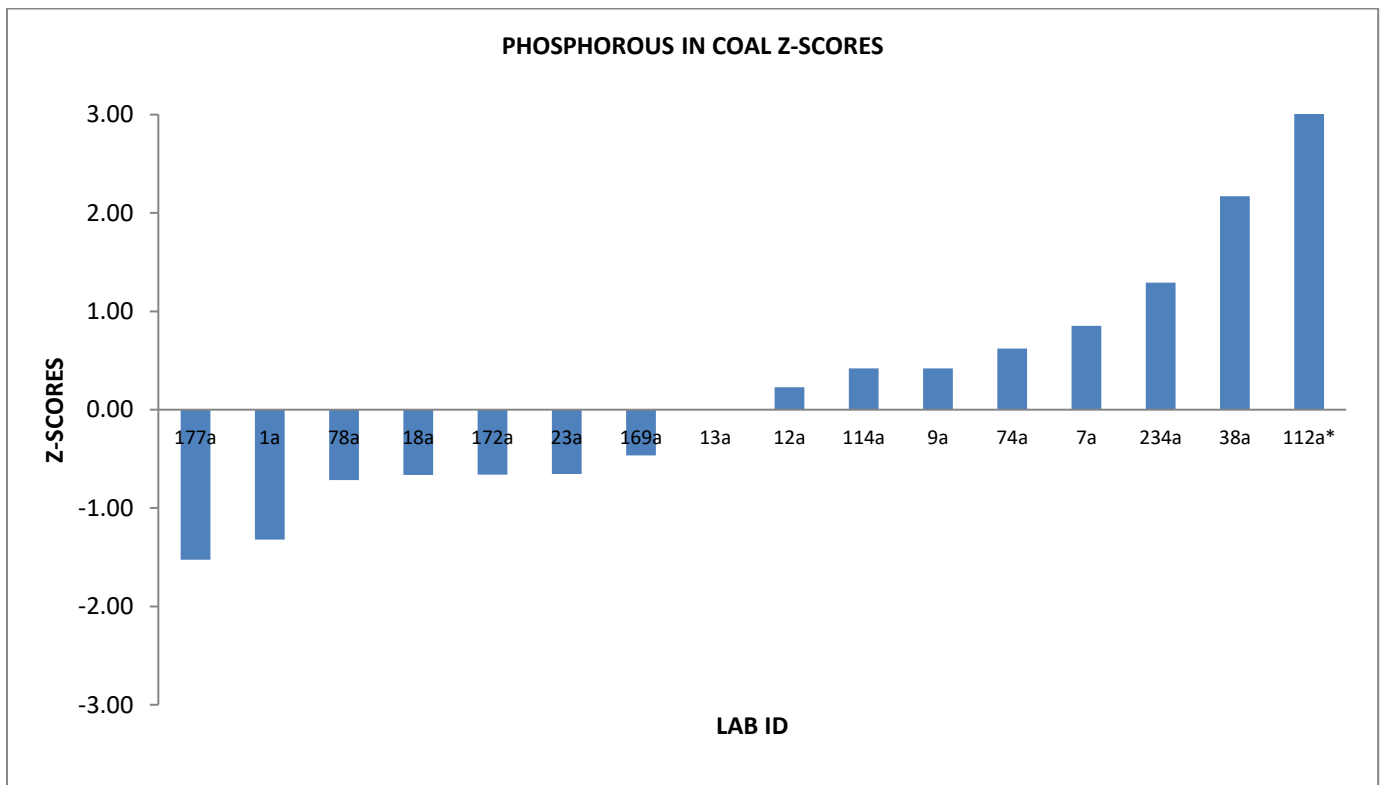




## COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023

## ANALYTICAL PARAMETER: PHOSPHOROUS IN COAL (%)

LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
1a	3,71	0,007	0,007	-1,32
7a	4,09	0,017	0,018	0,85
9a	4,10	0,015	0,016	0,42
12a	4,90	0,014	0,015	0,23
13a	4,53	0,013	0,014	0,00
18a	4,20	0,010	0,010	-0,66
23a	4,60	0,010	0,010	-0,65
38a	4,40	0,023	0,024	2,17
74a	4,30	0,016	0,017	0,62
78a	1,84	0,010	0,010	-0,71
<b>112a*</b>	<b>4,30</b>	<b>0,039</b>	<b>0,041</b>	<b>5,64</b>
114a	4,09	0,015	0,016	0,42
169a	3,42	0,011	0,011	-0,46
172a	4,23	0,010	0,010	-0,66
177a	4,47	0,006	0,006	-1,53
234a	4,20	0,019	0,020	1,29
<b>Number of results</b>	-	<b>16</b>	<b>16</b>	-
<b>OUTLIERS</b>	-	-	<b>1</b>	-
<b>AVERAGE</b>	-	<b>4,09</b>	<b>0,013</b>	<b>0,014</b>
<b>STD DEVIATION</b>	-	-	<b>0,005</b>	<b>0,005</b>
<b>MEDIAN</b>	-	-	<b>0,013</b>	<b>0,014</b>
<b>ROBUST AVERAGE</b>	-	-	<b>0,013</b>	<b>0,013</b>
<b>ROBUST STD DEVIATION</b>	-	-	<b>0,004</b>	<b>0,005</b>
<b>UoM</b>	-	-	<b>0,001</b>	<b>0,002</b>



COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: TOTAL CARBON (%)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
	1a	3,71	52,99	55,03	0,17
	<b>9a*</b>	4,10	<b>56,00</b>	<b>58,39</b>	<b>7,17</b>
	12a	4,90	51,77	54,44	-1,07
	18a	4,20	52,56	54,86	-0,18
	88a	4,55	53,38	55,92	2,02
	177a	4,47	52,20	54,64	-0,64
	202a	4,62	52,78	55,34	0,80
	234a	4,20	52,33	54,62	-0,68
	260a	4,61	52,23	54,75	-0,41
<b>Number of results</b>	-	9	9	9	-
<b>OUTLIERS</b>	-	-	<b>1</b>	<b>1</b>	-
<b>AVERAGE</b>	-	<b>4,37</b>	<b>52,53</b>	<b>54,95</b>	-
<b>MEDIAN</b>	-	-	<b>52,45</b>	<b>54,81</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,51</b>	<b>0,48</b>	-
<b>%RSD</b>	-	-	<b>0,97</b>	<b>0,87</b>	-
<b>ROBUST AVERAGE</b>	-	-	-	-	-
<b>ROBUST STD DEVIATION</b>	-	-	-	-	-
<b>UoM</b>	-	-	-	-	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: HYDROGEN (%)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
	1a	3,71	3,01	3,13	-0,09
	9a	4,10	2,98	3,11	-0,16
	12a	4,90	2,94	3,09	-0,22
	18a	4,20	2,89	3,02	-0,50
	88a	4,55	2,61	2,73	-1,57
	177a	4,47	3,44	3,60	1,68
	202a	4,62	3,01	3,16	0,02
	234a	4,20	2,87	3,00	-0,58
	260a	4,61	3,37	3,53	1,43
<b>Number of results</b>	-	9	9	9	-
<b>OUTLIERS</b>	-	-	<b>0</b>	<b>0</b>	-
<b>AVERAGE</b>	-	<b>4,37</b>	<b>3,01</b>	<b>3,15</b>	-
<b>MEDIAN</b>	-	-	<b>2,98</b>	<b>3,11</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,25</b>	<b>0,27</b>	-
<b>%RSD</b>	-	-	<b>8,43</b>	<b>8,48</b>	-
<b>ROBUST AVERAGE</b>	-	-	-	-	-
<b>ROBUST STD DEVIATION</b>	-	-	-	-	-
<b>UoM</b>	-	-	-	-	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: NITROGEN (%)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
	1a	3,71	1,48	1,54	1,00
	9a	4,10	1,22	1,27	-2,00
	12a	4,90	1,45	1,52	0,86
	18a	4,20	1,37	1,43	-0,22
	88a	4,55	1,32	1,39	-0,72
	177a	4,47	1,40	1,47	0,19
	202a	4,62	1,39	1,46	0,09
	260a	4,61	1,45	1,52	0,80
<b>Number of results</b>	-	8	8	8	-
<b>OUTLIERS</b>	-	-	<b>0</b>	<b>0</b>	-
<b>AVERAGE</b>	-	<b>4,40</b>	<b>1,39</b>	<b>1,45</b>	-
<b>MEDIAN</b>	-	-	<b>1,40</b>	<b>1,46</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,08</b>	<b>0,09</b>	-
<b>%RSD</b>	-	-	<b>6,04</b>	<b>6,09</b>	-
<b>ROBUST AVERAGE</b>	-	-	-	-	-
<b>ROBUST STD DEVIATION</b>	-	-	-	-	-
<b>UoM</b>	-	-	-	-	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023				
ANALYTICAL PARAMETER: ASH FUSION TEMPERATURES (°C)				
LAB ID	DEFORMATION	SOFTENING	HEMISPHERE	FLOW
9a	1400	1420	1440	1460
10a	1270	1280	1310	1350
18a	1250	1280	1310	1370
21a	1300	1310	1350	1400
23a	1220	1250	1300	1400
28a	1310	1330	1360	1400
36a	1320	1350	1380	1410
38a	1320	1340	1360	1400
49a	1250	1280	1330	1380
60a	1265	1311	1345	1454
80a	1270	1290	1310	1340
83a	1190	1210	1270	1340
95a	1320	1350	1370	1410
99a	1299	1332	1376	1447
106a	1250	1280	1320	1350
145a	1290	1300	1320	1350
151a	1230	1260	1290	1380
167a	1330	1360	1390	1420
234a	1280	1310	1340	1390
<b>Number of results</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>
<b>Outliers</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>AVERAGE</b>	<b>1282</b>	<b>1308</b>	<b>1341</b>	<b>1392</b>
<b>MEDIAN</b>	<b>1280</b>	<b>1310</b>	<b>1340</b>	<b>1400</b>
<b>STDEV</b>	<b>48</b>	<b>47</b>	<b>41</b>	<b>37</b>

Z-SCORES				
LAB ID	DEFORMATION	SOFTENING	HEMISPHERE	FLOW
9a	2,48	2,40	2,44	1,83
10a	-0,26	-0,59	-0,75	-1,14
18a	-0,68	-0,59	-0,75	-0,60
21a	0,37	0,05	0,23	0,21
23a	-1,31	-1,23	-1,00	0,21
28a	0,58	0,48	0,48	0,21
36a	0,79	0,90	0,97	0,48
38a	0,79	0,69	0,48	0,21
49a	-0,68	-0,59	-0,26	-0,33
60a	-0,36	0,07	0,11	1,67
80a	-0,26	-0,37	-0,75	-1,41
83a	-1,94	-2,08	-1,73	-1,41
95a	0,79	0,90	0,72	0,48
99a	0,35	0,52	0,87	1,48
106a	-0,68	-0,59	-0,51	-1,14
145a	0,16	-0,16	-0,51	-1,14
151a	-1,10	-1,01	-1,24	-0,33
167a	1,00	1,12	1,21	0,75
234a	-0,05	0,05	-0,01	-0,06

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: CHLORINE (ppm)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
	12a	4,9	39	41	-
	177a	4,47	84	88	-
	260a	4,61	50	52	-
<b>Number of results</b>	-	<b>3</b>	<b>3</b>	<b>3</b>	-
<b>OUTLIERS</b>	-	-	-	-	-
<b>AVERAGE</b>	-	<b>4,66</b>	<b>58</b>	<b>60</b>	-
<b>STD DEVIATION</b>	-	-	-	-	-
<b>MEDIAN</b>	-	-	-	-	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: FLUORINE (ppm)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY	DRY BASE	Z-SCORE (DRY BASE)
	12a	4,9	100	105	-
	169a	3,42	156	162	-
	177a	4,47	133	139	-
	260a	4,61	90	94	-
<b>Number of results</b>	-	<b>4</b>	<b>4</b>	<b>4</b>	-
<b>OUTLIERS</b>	-	-	-	-	-
<b>AVERAGE</b>	-	<b>4,35</b>	<b>120</b>	<b>125</b>	-
<b>STD DEVIATION</b>	-	-	<b>na</b>	<b>na</b>	-
<b>MEDIAN</b>	-	-	<b>na</b>	<b>na</b>	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: ASTM ASH (%)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY (%)	DRY BASE (%)	Z-SCORE (DRY BASE)
	1a	3,71	28,75	29,86	-0,69
	12a	4,90	28,48	29,95	-0,33
	202a	4,62	28,41	29,79	-0,97
	209a	4,70	28,98	30,41	1,49
	260a	4,61	28,77	30,16	0,51
<b>Number of results</b>	-	<b>5</b>	<b>5</b>	<b>5</b>	-
<b>OUTLIERS</b>	-	-	<b>0</b>	<b>0</b>	-
<b>AVERAGE</b>	-	<b>4,51</b>	<b>28,68</b>	<b>30,03</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,23</b>	<b>0,25</b>	-
<b>MEDIAN</b>	-	-	<b>28,75</b>	<b>29,95</b>	-
<b>%RSD</b>	-	-	<b>0,81</b>	<b>0,84</b>	-

COAL CONCEPTS - PROFICIENCY TESTING - JUNE 2023					
ANALYTICAL PARAMETER: ASTM VOLS (%)					
	LAB ID	MOISTURE IN ANALYSIS SAMPLE (%)	AIR DRY (%)	DRY BASE (%)	Z-SCORE (DRY BASE)
	1a	3,71	22,81	23,69	-0,33
	12a	4,90	22,80	23,97	0,38
	202a	4,62	22,75	23,85	0,08
	209a	4,70	22,15	23,24	-1,43
	260a	4,61	23,22	24,34	1,30
<b>Number of results</b>	-	<b>5</b>	<b>5</b>	<b>5</b>	-
<b>OUTLIERS</b>	-	-	<b>0</b>	<b>0</b>	-
<b>AVERAGE</b>	-	<b>4,51</b>	<b>22,75</b>	<b>23,82</b>	-
<b>STD DEVIATION</b>	-	-	<b>0,38</b>	<b>0,40</b>	-
<b>MEDIAN</b>	-	-	<b>22,80</b>	<b>23,85</b>	-
<b>%RSD</b>	-	-	<b>1,68</b>	<b>1,69</b>	-

**CONCLUSIONS**

1. The ISO Ash z-score trend is even distributed. The Robust average, Average and Median are similar. Two outliers were detected.
2. The overall ISO volatile trend is evenly distributed. Two outliers were detected. These were due to analytical errors. An RSD of 1.88% indicated a high precision of results received.
3. Calorific value trend is evenly distributed. Eight outliers were detected. The Average, Median and Robust Average are the same. A high precision of results received.
4. The sulphur z-score trend is evenly distributed. Nine outliers were detected. The Average and Robust Average are the same. A high precision of results received.
5. Phosphorous analysis: The z-score trend is evenly distributed. One outlier detected.
6. Generally acceptable results were obtained on Carbon, Hydrogen and Nitrogen. One outlier detected on Carbon.
7. Ash fusion: Generally, well done. No outliers 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**