



**AZURESKY PTY LTD PROFICIENCY TESTING SCHEME – HARDGROVE  
GRINDABILITY INDEX**

**REPORT NO 01  
OCTOBER 2025**

**LABORATORY CODE:**

Prepared in accordance with ISO/IEC 17043:2010 and ISO 13528:2022

**PT Scheme Coordinator:** Sifiso B Nyambi



**PT Scheme Manager:** Nonhlanhla Msibi



PT-AS002

LETTER TO PARTICIPANT

Dear **LAB NAME**,

Thank you for your participation in the AzureSky Coal Proficiency Testing Scheme – HGI Round 01, Oct-2025.

All calculations and evaluations were conducted in accordance with ISO/IEC 17043 and ISO 13528. Results are confidential and may only be used by the participant laboratory. Any outliers are indicated by  $|z| \geq 3$ . The overall distribution of results demonstrates satisfactory interlaboratory consistency.

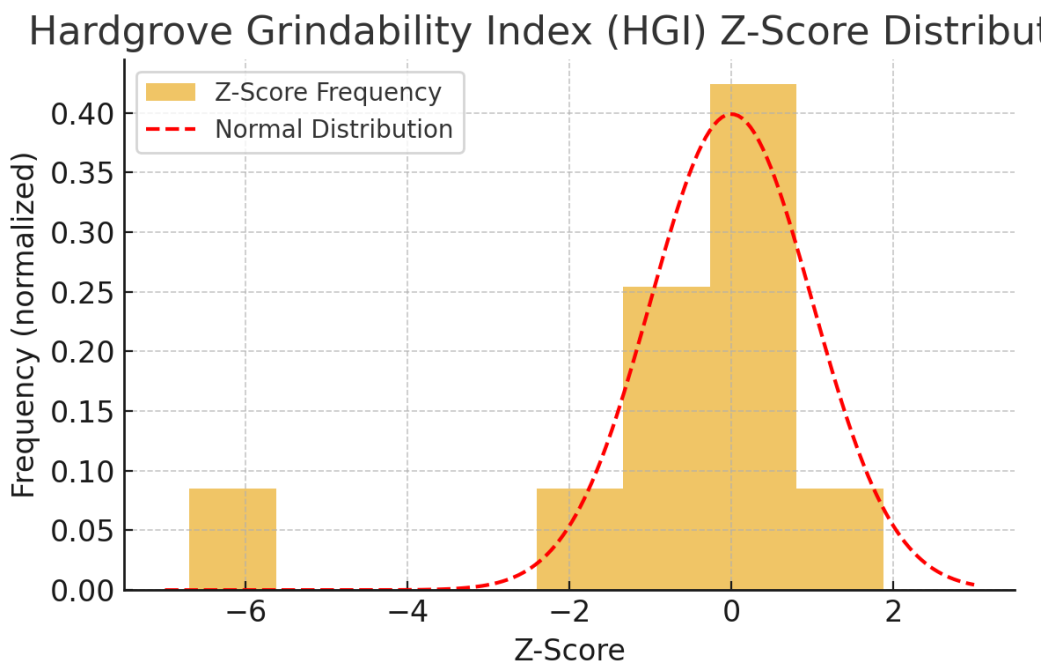
Participants are encouraged to submit any comments or queries regarding the results or operation of the scheme to [info@azuresky.it.com](mailto:info@azuresky.it.com) or [nonhlanhla@azuresky.it.com](mailto:nonhlanhla@azuresky.it.com).

### EXECUTIVE SUMMARY

Eleven laboratories participated in the AzureSky Coal PT Scheme for Hardgrove Grindability Index (HGI) during October 2025. All results were treated using robust statistical procedures in accordance with ISO 13528:2022. The assigned value and standard deviation for proficiency assessment were calculated using Algorithm A of ISO 13528:2022.

A total of 11 results were received, with one extreme outlier identified. The overall mean HGI was 53, and the robust average was 52 with a robust standard deviation of 7. The relative standard deviation (%RSD) was 9%. Results followed an approximate Gaussian distribution as shown below.

***Interpretation of trends requires a minimum of five data points to ensure a meaningful analysis, while graphical representation necessitates at least two data points to establish a visual comparison.***



**PT-AS002****TYPE OF SAMPLE USED**

The coal used in this proficiency testing round was bituminous coal sampled in Mpumalanga, South Africa

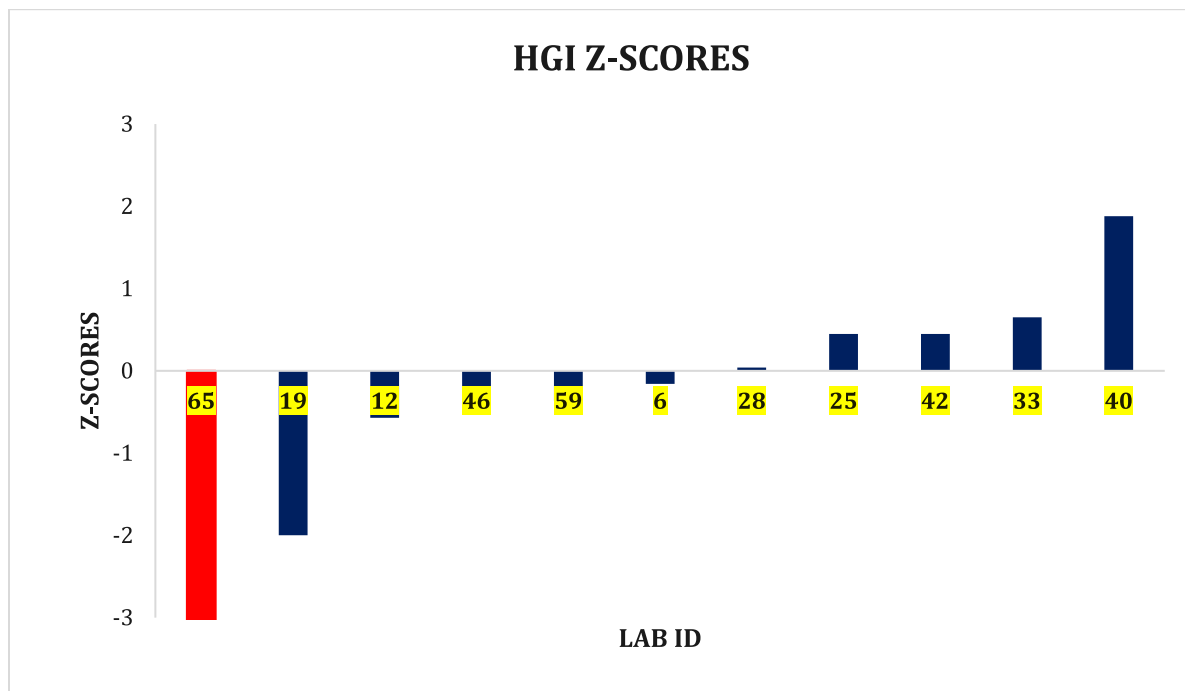
**PREPARATION OF SAMPLE**

100Kg sample with a nominal top size of 50mm was sourced. It was then stage crushed to - 4.75mm using jaw crushers as per the laboratory procedure. The sample was screened using 4.75mm and received on a 3mm screen to further filter the finer material generated during stage crushing. The -4.75mm material was transferred to a homogenizing drum and homogenized for 1 hour. The homogenized sample was transferred to containers with each containing 1Kg of the sample.

**PARTICIPANTS RESULTS**

	<b>Lab ID</b>	<b>HGI</b>	<b>Z-Score</b>
	6	52	-0,16
	12	50	-0,57
	19	43	-2,00
	25	55	0,45
	28	53	0,04
	33	56	0,65
	40	62	1,88
	42	55	0,45
	46	51	-0,37
	59	51	-0,37
	65	20	-6,70
<b>Number of scores</b>		11	
<b>Outliers</b>		1	
<b>Mean</b>		53	
<b>Standard Dev</b>		5	
<b>%RSD</b>		9	
<b>Median</b>		53	
<b>Minimum</b>		20	
<b>Maximum</b>		62	
<b>Range</b>		42	
<b>Robust Average</b>		52	
<b>Robust Standard Dev</b>		7	
<b>Uncertainty of Measurement</b>		1	
<b>Upper Reproducibility Limit</b>		66	
<b>Lower Reproducibility Limit</b>		38	

PT-AS002

HGI Z-SCORESINTERPRETATION OF Z-SCORES

- $|z| \leq 2.0$  – Satisfactory performance
- $2.0 < |z| < 3.0$  – Questionable result (investigation recommended)
- $|z| \geq 3.0$  – Unsatisfactory performance (requires corrective action)

LIST OF PARTICIPANTS

LIST OF PARTICIPANTS
Eskom Arnot Power Station
Eskom Kendal Power Station
Eskom Matla Power Station
Eskom Research and Testing
Noko Analytical Services Witbank
SABS Secunda
Sibonisiwe Coal Laboratory Services Main Lab
Siza Coal Services Kinross
Siza Middelburg
Umzamo Analytical Services Hendrina
Umzamo Laboratory Services Main lab

**PT-AS002****CONCLUSION**

The range of reported HGI values was 42 units (20 to 62). The robust average and median were consistent, indicating a balanced dataset. One result (HGI = 20) was identified as an outlier with a z-score of -6.7. The general performance of participants is satisfactory, with 91% of laboratories achieving  $|z| \leq 2$ . The analysis confirms that the PT round met ISO 17043 objectives for statistical validity, assigned value establishment, and reproducibility assessment.