



CERTIFICATE OF COAL QUALITY

№ ETT_EXP_002



ISO 45001:2018



ISO 9001:2015



ISO 14001:2015



OVERVIEW



LOCATION

Tsankhi mine



START DATE

2023.01.10



END DATE

2023.01.28



CAPACITY OF STOCKPILE

292.68 THOUSAND TONNES



STOCKPILE AGE

3 days



TOTAL SAMPLES

35 samples



AVERAGE QUALITY OF COAL STOCKPILE



The stockpile totally has taken 35 samples. Each sample is representative about 6000-11000 tonnes.



Picture 1. Overview of stockpile

This stockpile is mined 3 days ago (as of 30.01.2023) from the III seam of Tsankhi mine, and it was mined according to the relevant methods of ETT company's "Management Procedures of Mine Coal Stockpile "

Stockpile Name	Total moisture (ar)		Ash (db)		VOLATILE (daf)	
	%		%		%	
ETT_EXP_002	4.19	(-1.3; +1.5)	12.00	(-2.3; +2.1)	24.92	(-0.7; +1.0)

Stockpile Name	Total sulfur (db)		CSN		G-index	
	%				5:1	
ETT_EXP_002	0.79	(-0.3; +0.5)	7.0	(-0.5; +0.5)	85	(-8.0; +5.0)



CERTIFICATE OF ANALYSIS
23A40-96-TT

CLIENT: Erdenes Tavantolgoi JSC

ADDRESS: Finance Center, Jigjidjav-8
 1st khoroо, Chingelidai District
 Ulaanbaatar, Mongolia

ATTN: Erdenebileg E

PROJECT NO.: xxx

LAB. JOB NO.: 23A40-96-TT

NO. SAMPLES: 35

Notes/Comments: xxx

SAMPLES RECEIVED: 13-26/01/2023
INSTRUCTIONS RECEIVED: 13-26/01/2023
DATE OF REPORT: 14-29/01/2023
STATUS OF REPORT: FINAL
ANALYSIS COMPLETED: 14-29/01/2023
PREPARATION CODE: CRUSH 01, 02; MILL 01
ANALYSIS CODE: 1.1, COKING COAL
 TM, MOIS, ASH, VOL
 TSUL, GCY, CSN, DKN

APPROVED BY: Laboratory Manager

CHECKED BY: Chief Chemist

These test results are representative only of the sample received in the laboratory.

LAB NO.	SAMPLE NO.	AS RECEIVED BASIS					AIR DRIED BASIS					DRY BASIS					DRY, ASH-FREE BASIS					GB/T 5447						
		GB/T 211	GB/T 212	ISO 19579	GB/T 212	GB/T 212	GB/T 212	GB/T 212	ISO 19579	GB/T 212	GB/T 212	GB/T 212	GB/T 212	ISO 19579	GB/T 212	GB/T 212	GB/T 212	ISO 19579	GB/T 5448									
		Total Moisture (TM)	Ash (ASH)	Volatiles Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Moisture (MOIS)	Ash (ASH)	Volatiles Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Total Moisture (TM)	Ash (ASH)	Volatiles Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Moisture (MOIS)	Ash (ASH)	Volatiles Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Moisture (MOIS)	Ash (ASH)	Volatiles Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Crucible Swelling Number (CSN)	Coal Caking Index (CKIN)
1	ESS-23-1-co-1A-65	5.70	11.26	20.61	62.43	0.79	0.81	11.84	21.68	65.67	0.83	11.94	21.86	66.20	0.84	24.82	75.18	0.95	6.5	84	-	-	-	-	-	5:1	3:3	
2	ESS-23-1-co-1B-68	5.45	12.02	20.16	62.37	0.65	0.64	12.63	21.19	65.85	0.80	12.71	21.32	65.97	0.69	24.43	75.57	0.79	7.0	81	-	-	-	-	-	7.0	81	
3	ESS-23-1-co-1C-131	4.08	13.14	20.07	62.71	0.78	0.57	13.62	20.80	65.00	0.80	13.70	20.92	65.38	0.81	24.24	75.76	0.94	7.0	77	-	-	-	-	-	7.0	77	
4	ESS-23-1-co-1D-132	4.81	11.69	20.37	63.13	0.82	0.51	12.22	21.29	65.98	0.85	12.28	21.40	66.32	0.86	24.40	75.60	0.98	7.5	84	-	-	-	-	-	7.5	84	
5	ESS-23-1-co-1E-134	3.34	12.08	20.57	64.01	0.91	0.51	12.44	21.17	65.22	0.94	12.50	21.28	66.22	0.94	24.32	75.68	1.06	7.0	81	-	-	-	-	-	7.0	81	
6	ESS-23-1-co-1G-137	4.44	11.09	20.60	63.87	0.55	0.47	11.53	21.41	66.39	0.57	11.60	21.55	66.84	0.58	24.38	75.62	0.65	7.5	83	-	-	-	-	-	7.5	83	
7	ESS-23-1-co-1F-138	3.86	9.27	21.46	65.41	0.88	0.83	9.58	22.18	67.61	0.50	9.64	22.32	68.04	0.50	24.70	75.30	0.55	7.5	83	-	-	-	-	-	7.5	83	
8	ESS-23-1-co-2A-147	4.22	12.48	20.80	62.50	0.81	0.70	12.94	21.56	64.80	0.84	13.03	21.71	65.25	0.85	24.97	75.03	0.97	7.0	84	-	-	-	-	-	7.0	84	
9	ESS-23-1-co-2B-148	4.19	13.55	20.51	61.76	0.79	0.57	14.06	21.28	64.09	0.82	14.14	21.40	64.46	0.83	24.93	75.07	0.97	7.0	82	-	-	-	-	-	7.0	82	
10	ESS-23-1-co-2C-149	4.01	11.69	21.26	61.04	0.88	0.48	12.12	22.04	65.36	0.91	12.18	22.15	65.67	0.92	25.22	74.78	1.05	7.5	88	-	-	-	-	-	7.5	88	
11	ESS-23-1-co-2D-150	4.02	10.92	21.35	63.71	0.73	0.47	11.32	22.14	66.07	0.76	11.72	22.25	66.38	0.76	25.10	74.90	0.86	7.5	87	-	-	-	-	-	7.5	87	
12	ESS-23-1-co-2E-151	4.16	11.99	21.19	62.66	0.80	0.50	12.45	22.00	65.05	0.83	12.51	22.11	65.37	0.84	25.27	74.73	0.96	7.5	89	-	-	-	-	-	7.5	89	
13	ESS-23-1-co-2F-152	4.21	12.93	20.43	62.43	0.85	0.60	13.41	21.20	64.79	0.89	13.49	21.33	65.18	0.89	24.66	75.34	1.03	7.5	86	-	-	-	-	-	7.5	86	
14	ESS-23-1-co-2G-153	3.53	11.24	21.31	63.91	0.84	0.54	11.59	21.97	65.90	0.66	11.65	22.09	66.26	0.66	25.01	74.99	0.75	7.0	84	-	-	-	-	-	7.0	84	
15	ESS-23-1-co-3A-156	3.67	11.29	21.54	63.50	0.67	0.54	11.66	22.24	65.56	0.70	11.72	22.36	65.92	0.70	25.33	74.67	0.79	7.0	85	-	-	-	-	-	7.0	85	
16	ESS-23-1-co-3B-157	3.45	10.31	21.91	64.33	0.67	0.49	10.62	22.58	66.31	0.69	10.68	22.69	66.63	0.70	25.40	74.60	0.78	7.0	86	-	-	-	-	-	7.0	86	
17	ESS-23-1-co-3C-158	4.13	10.15	21.66	64.06	0.85	0.42	10.55	22.50	66.54	0.89	10.59	22.59	66.81	0.89	25.27	74.73	1.00	7.0	87	-	-	-	-	-	7.0	87	
18	ESS-23-1-co-3D-159	4.36	9.84	21.76	64.04	0.95	0.53	10.23	22.63	66.61	0.99	10.28	22.75	66.96	1.00	25.36	74.64	1.11	7.0	86	-	-	-	-	-	7.0	86	
19	ESS-23-1-co-3E-162	4.05	10.46	21.57	63.92	0.63	0.55	10.84	22.36	66.25	0.65	10.89	22.67	66.44	0.61	25.44	74.56	0.69	7.0	88	-	-	-	-	-	7.0	88	
20	ESS-23-1-co-3F-163	4.36	10.41	21.48	63.55	0.58	0.56	10.83	22.54	66.07	0.61	11.43	21.62	66.95	1.07	24.41	75.59	1.21	7.0	83	-	-	-	-	-	7.0	83	
21	ESS-23-1-co-3G-164	4.67	10.90	20.61	63.82	1.02	0.46	11.38	21.62	66.64	1.06	11.43	21.62	66.95	1.07	24.41	75.59	1.21	7.0	83	-	-	-	-	-	7.0	83	
22	ESS-23-1-co-4A-170	4.91	11.86	20.52	62.71	0.71	0.58	12.40	21.45	65.57	0.75	12.47	21.58	65.95	0.75	25.58	74.42	0.68	7.5	88	-	-	-	-	-	7.5	88	
23	ESS-23-1-co-4B-171	4.67	10.55	21.69	63.10	0.58	0.45	11.01	22.45	65.89	0.60	11.06	22.75	66.19	0.61	25.58	74.42	0.68	7.5	88	-	-	-	-	-	7.5	88	
24	ESS-23-1-co-4C-172	5.03	11.75	21.15	62.08	0.75	0.56	12.30	22.14	65.00	0.79	12.37	22.27	65.36	0.79	25.41	74.59	0.80	7.5	86	-	-	-	-	-	7.5	86	
25	ESS-23-1-co-4D-173	4.40	12.75	20.64	62.21	0.72	0.54	13.26	21.48	64.72	0.75	13.34	21.59	65.07	0.76	24.92	75.08	0.87	7.0	80	-	-	-	-	-	7.0	80	
26	ESS-23-1-co-4E-174	5.09	11.02	21.35	62.55	0.66	0.21	11.59	22.44	67.76	0.70	11.61	22.49	65.90	0.70	25.44	74.56	0.79	7.5	86	-	-	-	-	-	7.5	86	
27	ESS-23-1-co-4F-175	5.21	12.33	20.75	61.71	0.63	0.51	12.94	21.77	64.78	0.66	13.01	21.89	65.11	0.66	25.16	74.84	0.76	7.5	85	-	-	-	-	-	7.5	85	
28	ESS-23-1-co-4G-176	4.26	11.26	20.76	63.71	0.93	0.58	11.70	21.56	66.16	0.97	11.77	21.69	66.55	0.97	24.58	75.42	1.10	7.5	85	-	-	-	-	-	7.5	85	
29	ESS-23-1-co-5A-189	2.86	12.59	21.03	63.52	1.35	0.50	12.90	21.54	65.06	1.38	12.86	21.65	65.39	1.39	24.87	75.13	1.59	4.5	82	-	-	-	-	-	4.5	82	
30	ESS-23-1-co-5B-190	3.08	10.23	21.87	64.82	0.73	0.47	10.50	22.46	66.87	0.75	10.55	22.56	66.88	0.75	25.23	74.77	0.84	7.0	87	-	-	-	-	-	7.0	87	
31	ESS-23-1-co-5C-191	3.05	10.71	21.97	64.27	0.78	0.45	11.00	22.56	66.00	0.80	11.05	22.66	66.30	0.80	25.47	74.53	0.90	7.5	88	-	-	-	-	-	7.5	88	
32	ESS-23-1-co-5D-192	3.35	11.38	20.60	64.27	1.01	0.44	11.73	21.22	66.62	1.04	11.78	21.31	66.91	1.04	24.16	75.84	1.18	7.0	84	-	-	-	-	-	7.0	84	
33	ESS-23-1-co-5E-193	3.47	12.70	20.63	63.20	0.73	0.56	13.08	21.37	65.48	0.75	13.15	21.37	65.48	0.75	24.61	75.59	0.87	7.0	84	-	-	-	-	-	7.0	84	
34	ESS-23-1-co-5F-194	3.74	13.18	20.47	62.61	1.09	0.63	13.60	21.13	64.63	1.13	13.69	21.26	65.04	1.13	24.64	75.36	1.31	7.0	83	-	-	-	-	-	7.0	83	
35	ESS-23-1-co-5G-195	3.76	10.47	21.48	64.29	0.64	0.53	10.82	22.20	66.45	0.66	10.88	22.32	66.80	0.66	25.05	74.95	0.74	7.0	87	-	-	-	-	-	7.0	87	





СТАНДАРТ, ХЭМЖИЛ ЗҮЙН ГАЗАР

ИТГЭМЖЛЭЛИЙН ГЭРЧИЛГЭЭ

Дугаар TL 10

ISO/IEC 17025:2017 (MNS ISO/IEC 17025:2018)
стандартын шаардлагыг хангасан

“АЛС ГРУПП” ХХК-ийн лабораторийг

(Улаанбаатар хот дахь салбар, Хаяг: Хан-Уул дүүрэг, 2-р хороо, Чингисийн өргөн чөлөө, Монгол Нэхмэл ХХК-ийн байр)
(Оюу толгой дахь салбар, Хаяг: Өмнөговь аймаг, Ханбогд сум)

хавсралтад заасан итгэмжлэлийн хүрээнд сорилт
гүйцэтгүүлэхээр итгэмжлэв.

Энэ итгэмжлэл нь тодорхойлсон хүрээнд сорилт гүйцэтгэх техникийн чадавхитай бөгөөд лабораторийн чанарын удирдлагын тогтолцоотой болохыг (ISO-ILAC-IAF-ын 2017 оны хамтарсан мэдээгдлийг үндэслэн) гэрчилнэ.

Анх итгэмжлэл авсан огноо:
2009.09.10

Олгосон огноо: 2019.10.01
Дуусах огноо: 2023.10.01

СТАНДАРТ, ХЭМЖИЛ ЗҮЙН ГАЗРЫН ДЭД ДАРГА



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СТАНДАРТ, ХЭМЖИЛ ЗҮЙН ГАЗАР

ИТГЭМЖЛЭЛИЙН ГЭРЧИЛГЭЭ

Дугаар TL 10-01

ISO/IEC 17025:2017 (MNS ISO/IEC 17025:2018) стандартын
шаардлагыг хангасан

**Таван Толгой уурхай дахь “АЛС Групп” ХХК-ийн Нүүрсний
шинжилгээний лабораторийг**

(Өмнөговь аймаг, Цогтцэций сум)

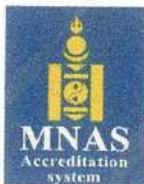
хавсралтад заасан итгэмжлэлийн хүрээнд сорилт
гүйцэтгүүлэхээр итгэмжлэв.

Энэ итгэмжлэл нь тодорхойлсон хүрээнд сорилт гүйцэтгэх техникийн чадавхитай бөгөөд
лабораторийн чанарын удирдлагын тогтолцоотой болохыг (ISO-ILAC-IAF-ын 2017 оны хамтарсан
мэдээдлийг үндэслэн) гэрчилнэ.

Анх итгэмжлэл авсан огноо:
2015.10.01

Итгэмжлэл олгосон огноо: 2019.12.30
Дуусах огноо: 2023.10.01

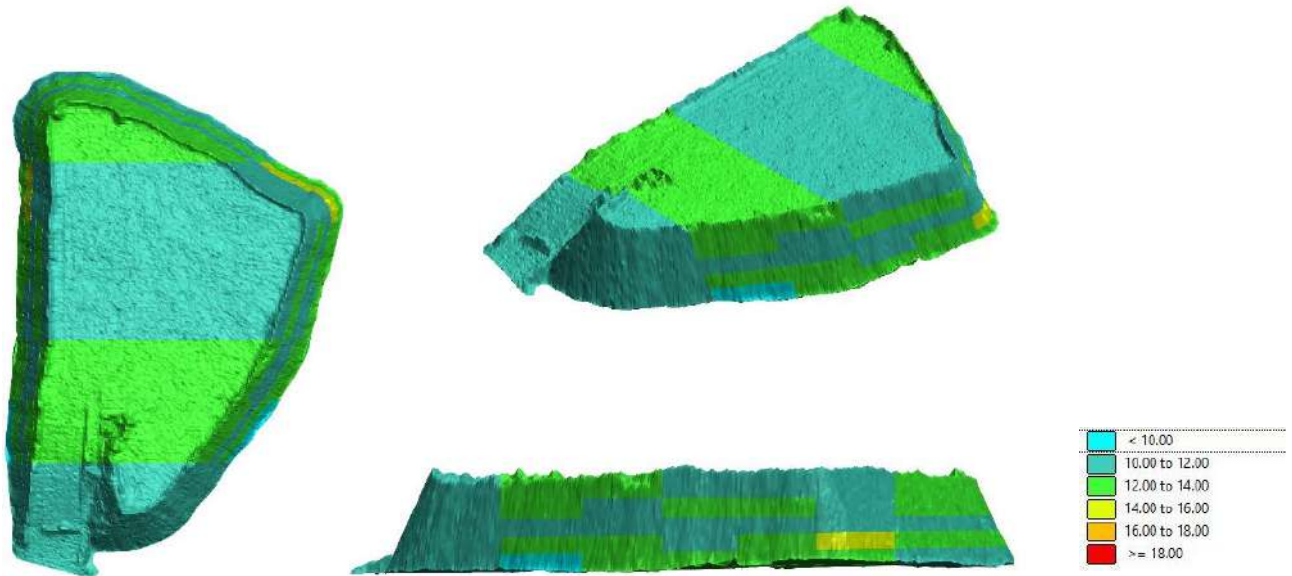
СТАНДАРТ, ХЭМЖИЛ ЗҮЙН ГАЗРЫН ДЭД ДАРГА



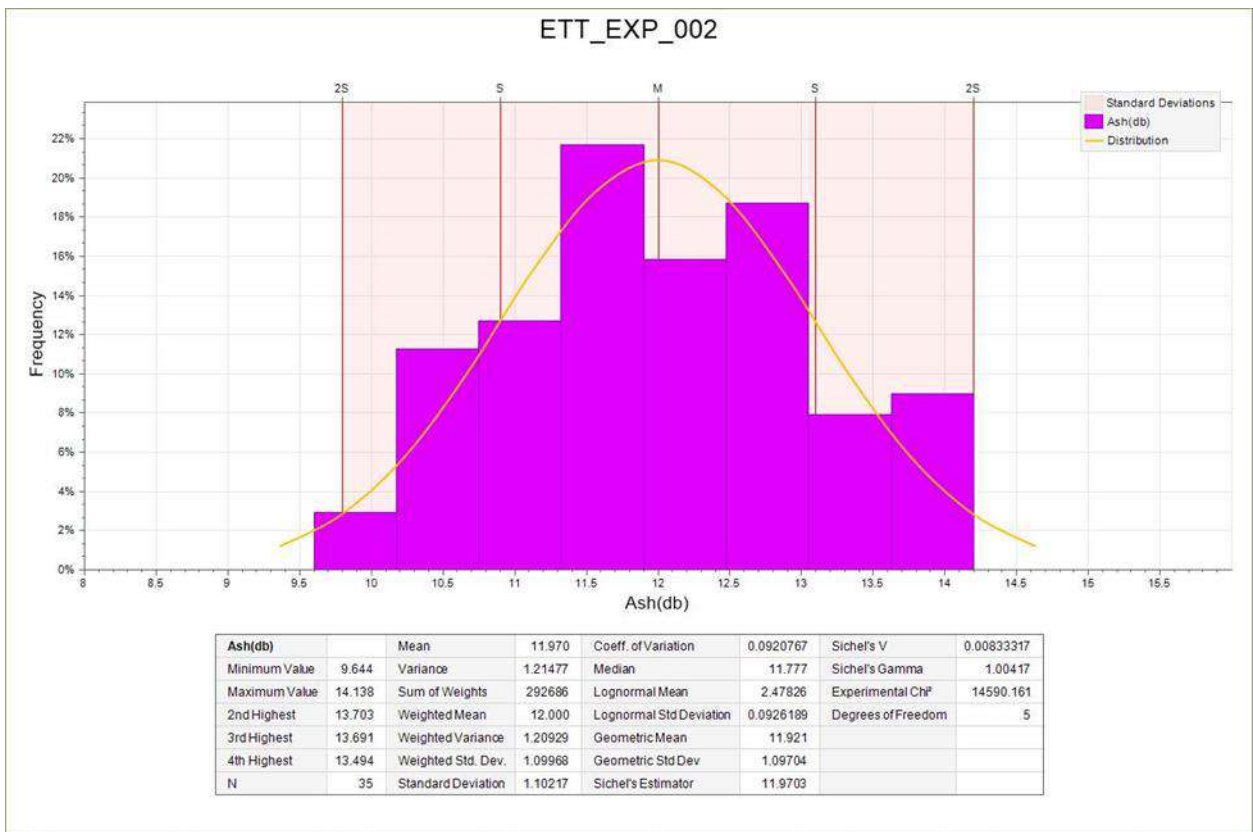
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1. ASH OF STOCKPILE

The stockpile is mined from the Tsankhi mine with the number ETT_EXP_002. Ash of the coking coal stockpile of Tsankhi mine has a minimum index of 9.65% and a maximum of 14.14%, and the average index is 12.0 %, which is represented by the results of the analysis of a total of 35 samples.

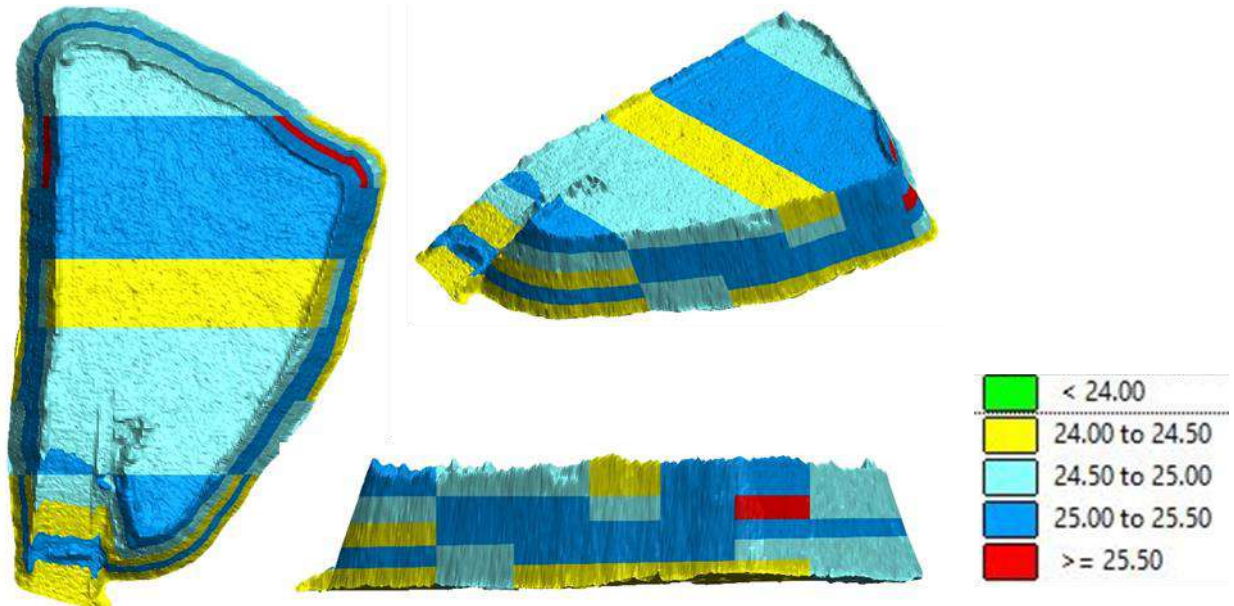


Picture 2. Ash of stockpile

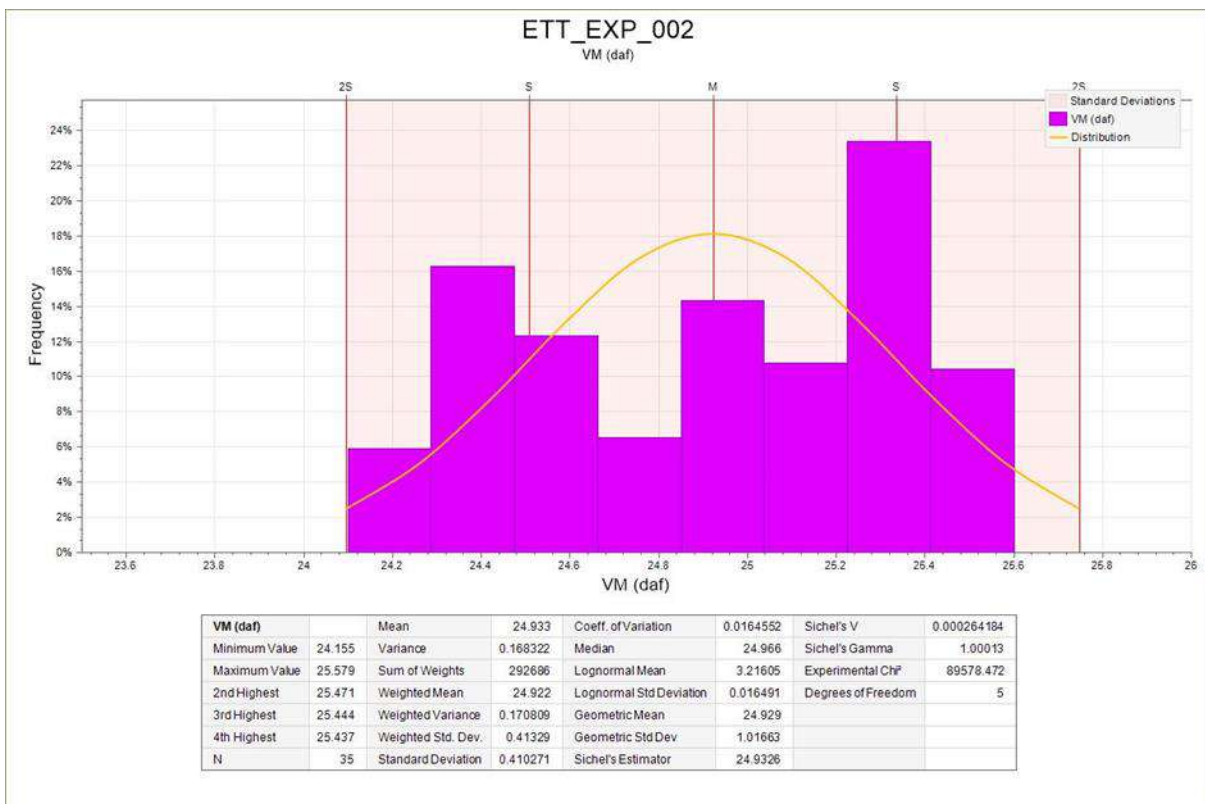


2. VOLATILE MATTER OF STOCKPILE

Volatile matter of the coking coal stockpile of Tsankhi mine has a minimum index of 24.16% and a maximum of 25.58%, and the average index is 24.92 %, which is represented by the results of the analysis of a total of 35 samples.



Picture 3. Volatile matter of stockpile

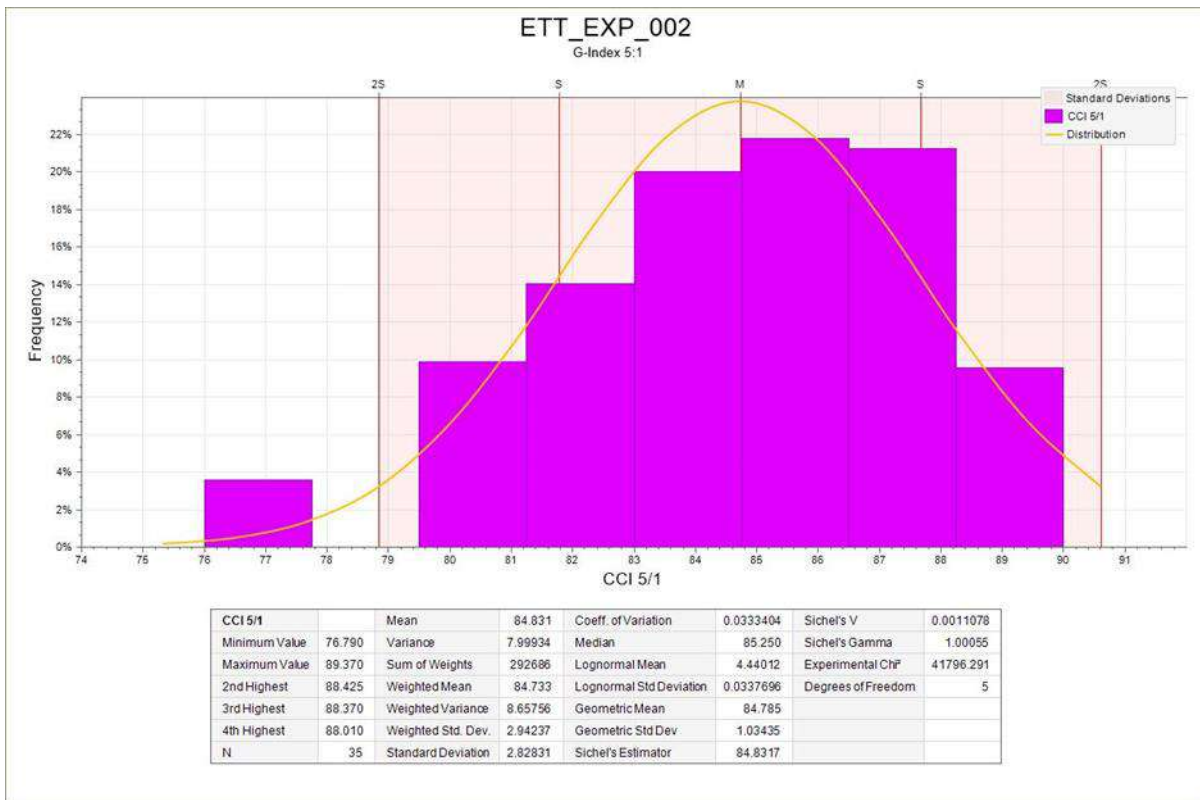


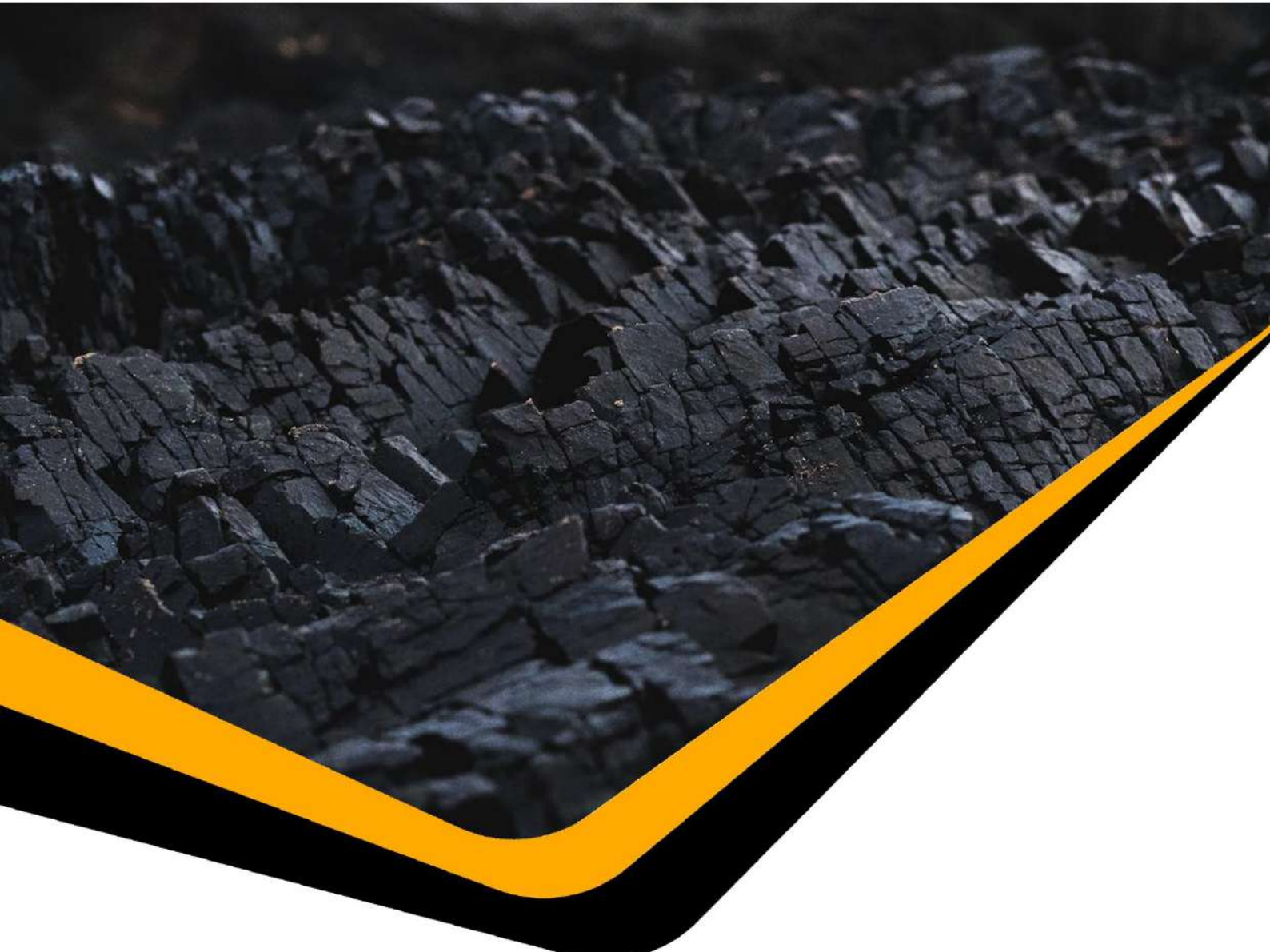
3. G-INDEX OF STOCKPILE

G-index of the coking coal stockpile of Tsankhi mine has a minimum index of 76 and a maximum of 89, and the average index is 84.7, which is represented by the results of the analysis of a total of 35 samples.



Picture 4. G-index of stockpile





ISO 45001:2018



ISO 9001:2015



ISO 14001:2015



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1800-1072



Mongolia, Ulaanbaatar, Chingeltei
district, 1st khoroo, Jigjidjav
street-8 Financial center

