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# НҮҮРСНИЙ ОВООЛГЫН ҮЗҮҮЛЭЛТ

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№ ETT\_SP\_TC



ISO 45001:2018



ISO 9001:2015



ISO 14001:2015



НҮҮРСНИЙ ОВООЛГЫН ЧАНАРЫН ДУНДАЖ ҮЗҮҮЛЭЛТ

<p><b>НИЙТ ЧИЙГ</b> TM (ar)</p> <p><b>3.0%</b> (-1.0; +3.0)</p>	<p><b>БАРЬЦАЛДАХ</b> ЧАНАР</p> <p><b>≤5.0</b></p>	<p><b>ДЭГДЭМХИЙ</b> БОДИС VM (daf)</p> <p><b>34.0%</b> (max)</p>	
<p><b>НИЙТ ХҮХЭР</b> S(db)</p> <p><b>1.0%</b> (-0.3; +0.5)</p>	<p><b>ҮНСЛЭГ</b> Ash(db)</p> <p><b>26.0%</b> (-5.0; +5.0)</p>	<p><b>ИЛЧЛЭГ</b> (ar)</p> <p><b>5500</b> (-500; +500)</p>	<p><b>НҮҮРСНИЙ</b> ХЭМЖЭЭ</p> <p><b>128.0</b> МЯН.ТН</p>

НҮҮРСНИЙ ОВООЛГЫН ШИНЖИЛГЭЭНИЙ ҮР ДҮН

ALS GROUP LLC  
Mongol Nakhmel Building, 2nd khoroo  
Chinggis Avenue, Khan-Uul District  
Ulaanbaatar, Mongolia  
Tel +976 70 007667



CERTIFICATE OF ANALYSIS  
24B140-J122-TT

**CLIENT:** Erdenes Tavantolgoi JSC  
**ADDRESS:** Finance Center, Jigjidjav-8  
1st khoroo, Chingeltei District  
Ulaanbaatar, Mongolia  
**ATTN:** Munkhtuul.G  
**PROJECT NO.** xxx  
**LAB. JOB NO.** 24B140-J122-TT  
**NO. SAMPLES:** 61  
**Notes/Comments:** xxx

**SAMPLES RECEIVED:** 16/02/2024 12/10/2024  
**INSTRUCTIONS RECEIVED:** 16/02/2024 12/10/2024  
**DATE OF REPORT:** 17/02/2024 13/10/2024  
**STATUS OF REPORT:** FINAL  
**ANALYSIS COMPLETE:** 17/02/2024 13/10/2024  
**PREPARATION CODE:** CRUSH-01, 02; MILL-01  
**ANALYSIS CODE:** 2.1\_THERMAL COAL\_CSN  
TM, MOIS, ASH, VOL, TSUL  
GCV, CKIN

**APPROVED BY:** Laboratory Manager  
**Quality 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							
		Total Moisture (TM)	Ash (ASH)	Volatile Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Gross Calorific Value (GCV)	Moisture (MOIS)	Ash (ASH)	Volatile Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Gross Calorific Value (GCV)
		%				kcal/kg							
1	ETT-SP-30013-1A	3.36	24.08	22.47	50.09	0.78	5975	0.47	24.80	23.14	51.59	0.80	6154
2	ETT-SP-30013-1B	4.30	21.92	22.68	51.10	1.02	6128	0.62	22.76	23.56	53.06	1.06	6365
3	ETT-SP-30013-1C	4.07	24.47	22.39	49.07	1.05	5862	0.63	25.35	23.20	50.83	1.09	6072
4	ETT-SP-30013-1D	4.63	23.33	22.61	49.43	0.97	5873	0.73	24.28	23.54	51.45	1.01	6113
5	ETT_SP_30013-2A	3.04	21.59	23.24	52.13	0.76	6185	0.48	22.16	23.85	53.50	0.78	6348
6	ETT_SP_30013-2B	2.80	29.13	21.21	46.85	0.98	5536	0.59	29.79	21.70	47.92	1.00	5662
7	ETT_SP_30013-2C	3.89	27.86	20.94	47.31	0.90	5652	0.62	28.80	21.65	48.92	0.93	5845
8	ETT_SP_30013-2D	4.34	22.57	22.74	50.35	0.74	6050	0.59	23.45	23.63	52.33	0.77	6287
9	ETT_SP_30013-3A	2.29	22.57	24.41	50.73	0.86	6123	0.49	22.99	24.86	51.67	0.88	6235
10	ETT_SP_30013-3B	2.37	22.36	23.87	51.40	0.85	6214	0.51	22.79	24.33	52.38	0.87	6332
11	ETT_SP_30013-3C	2.69	23.67	23.50	50.14	1.03	6068	0.54	24.19	24.02	51.24	1.06	6202
12	ETT_SP_30013-3D	2.41	23.54	23.71	50.34	0.96	6084	0.51	24.00	24.17	51.32	0.97	6202

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13	ETT_SP_30013-4A	1.23	30.28	21.97	46.51	0.98	5563	0.59	30.48	22.11	46.81	0.98	5599
14	ETT_SP_30013-4B	1.89	24.08	22.54	51.49	0.94	6152	0.65	24.39	22.82	52.14	0.96	6229
15	ETT_SP_30013-4C	1.63	24.45	23.88	50.04	0.97	6087	0.52	24.73	24.15	50.60	0.98	6156
16	ETT_SP_30013-5A	1.22	24.11	22.90	51.77	0.90	6135	0.51	24.28	23.06	52.15	0.90	6179
17	ETT_SP_30013-5B	1.80	24.13	23.31	50.76	0.78	6095	0.75	24.39	23.56	51.30	0.79	6160
18	ETT_SP_30013-5C	1.57	26.77	22.23	49.42	0.80	5841	0.69	27.01	22.43	49.86	0.80	5893
19	ETT_SP_30013-6A	1.61	21.23	23.00	54.15	0.95	6371	0.68	21.44	23.22	54.66	0.96	6431
20	ETT_SP_30013-6B	2.41	22.34	22.01	53.23	0.56	6291	0.65	22.75	22.41	54.19	0.57	6404
21	ETT_SP_30013-6C	2.40	23.22	21.93	52.44	0.99	6193	0.62	23.65	22.33	53.40	1.01	6306
22	ETT_SP_30013-7A	1.96	23.62	21.32	53.10	2.51	6142	0.73	23.92	21.59	53.77	2.54	6219
23	ETT_SP_30013-7B	1.36	23.53	22.74	52.37	0.88	6241	0.65	23.70	22.90	52.74	0.88	6285
24	ETT_SP_30013-8A	1.15	25.18	23.14	50.53	0.82	6120	0.79	25.27	23.22	50.72	0.83	6143
25	ETT_SP_30013-8B	1.70	23.65	22.68	51.97	0.69	6208	0.82	23.86	22.88	52.44	0.69	6264
26	ETT_SP_30013-8C	1.73	30.09	22.99	45.19	0.57	5427	0.82	30.37	23.20	45.61	0.57	5477
27	ETT_SP_30013-T1-1A	1.83	40.89	18.34	38.94	0.89	4553	0.83	41.31	18.53	39.33	0.90	4599
28	ETT_SP_30013-T1-2A	2.43	22.78	24.30	50.49	0.98	6267	0.75	23.17	24.72	51.36	1.00	6374
29	ETT_SP_30013-T2-1A	1.80	32.71	20.32	45.17	1.80	5401	0.58	33.12	20.57	45.73	1.82	5468
30	ETT_SP_30013-T2-1B	2.72	27.06	22.68	47.54	0.89	5788	1.02	27.53	23.07	48.37	0.90	5889
31	ETT_SP_30013-T2-1C	3.22	37.02	20.14	39.63	0.70	4872	1.10	37.83	20.58	40.49	0.71	4979
32	ETT_SP_30013-T2-2A	5.42	22.07	23.19	49.32	1.01	6013	1.13	23.07	24.25	51.55	1.06	6286
33	ETT_SP_30013-T2-2B	4.41	29.22	22.16	44.21	0.92	5434	1.20	30.20	22.90	45.69	0.95	5617
34	ETT_SP_30013-T2-2C	5.09	21.69	22.77	50.45	1.08	6072	1.07	22.61	23.74	52.58	1.12	6329
35	ETT_SP_30013-T2-3A	1.90	23.82	24.52	49.76	0.75	6187	0.90	24.07	24.77	50.26	0.76	6250
36	ETT_SP_30013-T2-3B	2.41	24.47	24.25	48.87	0.73	5991	0.92	24.84	24.62	49.62	0.74	6083
37	ETT_SP_30013-T2-3C	2.62	20.41	25.30	51.67	0.83	6439	0.90	20.77	25.75	52.58	0.85	6552
38	ETT_SP_30013-T2-4A	8.21	26.82	21.38	43.59	0.75	5286	1.26	28.85	23.00	46.90	0.80	5686
39	ETT_SP_30013-T2-4B	7.61	30.04	19.72	42.64	0.78	5128	1.21	32.11	21.08	45.59	0.83	5483
40	ETT_SP_30013-T2-4C	5.62	30.35	19.69	44.34	0.99	5332	0.87	31.88	20.68	46.58	1.04	5600
41	ETT_SP_30013-T2-5A	3.12	25.65	23.27	47.97	0.94	5848	0.95	26.22	23.79	49.04	0.97	5979
42	ETT_SP_30013-T2-5B	1.91	30.91	22.57	44.62	0.77	5438	0.93	31.21	22.79	45.06	0.77	5492
43	ETT_SP_30013-T2-6A	1.50	28.23	21.77	48.50	0.79	5839	0.45	28.53	22.00	49.02	0.80	5901
44	ETT_SP_30013-T2-6B	2.51	24.06	22.95	50.48	0.65	6104	0.54	24.54	23.42	51.50	0.66	6228
45	ETT_SP_30013-T2-7A	3.51	23.02	24.91	48.57	0.90	5894	0.98	23.62	25.56	49.84	0.92	6048
46	ETT_SP_30013-T2-7B	3.65	22.02	23.49	50.84	0.85	5922	1.08	22.61	24.11	52.20	0.87	6080
47	ETT_SP_30013-T2-8A	3.74	25.72	23.02	47.52	1.01	5730	0.86	26.49	23.71	48.94	1.04	5901
48	ETT_SP_30013-T2-8B	3.70	22.17	22.29	51.84	0.65	6054	1.24	22.74	22.86	53.17	0.66	6209
49	ETT_SP_30013-T2-9A	3.87	26.26	22.48	47.38	0.78	5722	1.01	27.04	23.15	48.79	0.80	5893
50	ETT_SP_30013-T3-1A	2.95	21.72	23.44	51.88	0.66	6272	0.86	22.19	23.95	53.00	0.67	6408
51	ETT_SP_30013-T3-1B	3.04	27.13	21.73	48.10	0.62	5801	0.96	27.71	22.19	49.14	0.63	5926
52	ETT_SP_30013-T3-1C	2.11	22.19	23.53	52.17	0.75	6395	0.66	22.52	23.88	52.94	0.76	6490
53	ETT_SP_30013-T3-1D	2.27	27.68	21.56	48.49	0.67	5848	0.74	28.11	21.90	49.25	0.68	5939
54	ETT_SP_30013-T3-2A	3.74	23.28	21.87	51.10	0.71	6147	0.70	24.02	22.56	52.72	0.73	6341
55	ETT_SP_30013-T3-2B	3.94	23.98	21.48	50.59	0.57	6050	0.85	24.76	22.17	52.22	0.59	6245
56	ETT_SP_30013-T3-2C	3.54	21.87	23.85	50.75	0.80	6206	0.77	22.49	24.53	52.20	0.82	6384
57	ETT_SP_30013-T3-2D	4.22	20.73	23.78	51.27	0.83	6242	0.71	21.49	24.65	53.15	0.86	6470
58	ETT_SP_30013-T3-3A	1.97	25.70	22.88	49.45	0.89	4069	0.43	26.11	23.23	50.23	0.90	6165
59	ETT_SP_30013-T3-3B	2.77	25.64	22.85	48.74	0.84	5941	0.59	26.21	23.37	49.83	0.86	6075
60	ETT_SP_30013-T3-3C	3.61	26.56	22.55	47.28	0.69	5715	1.04	27.27	23.15	48.54	0.71	5867
61	ETT_SP_30013-T3-3D	3.72	25.62	21.97	48.68	0.73	5883	0.89	26.38	22.61	50.12	0.75	6056

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Tel +976 70 007667



**CERTIFICATE OF ANALYSIS**  
**24B140-J122-TT**

**CLIENT:** Erdenes Tavantolgoi JSC  
**ADDRESS:** Finance Center, Jigjidjav-8  
1st khoroo, Chingeltei District  
Ulaanbaatar, Mongolia  
**ATTN:** Munkhtuul.G  
**PROJECT NO.** xxx  
**LAB. JOB NO.** 24B140-J122-TT  
**NO. SAMPLES:** 61  
**Notes/Comments:** xxx

**SAMPLES RECEIVED:** 16/02/2024 12/10/2024  
**INSTRUCTIONS RECEIVED:** 16/02/2024 12/10/2024  
**DATE OF REPORT:** 17/02/2024 13/10/2024  
**STATUS OF REPORT:** FINAL  
**ANALYSIS COMPLETE:** 17/02/2024 13/10/2024  
**PREPARATION CODE:** CRUSH-01, 02; MILL-01  
**ANALYSIS CODE:** 2.1\_THERMAL COAL  
CSN  
TMI, MOIS, ASH, VOL,  
TSUL, GCV, CKN

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

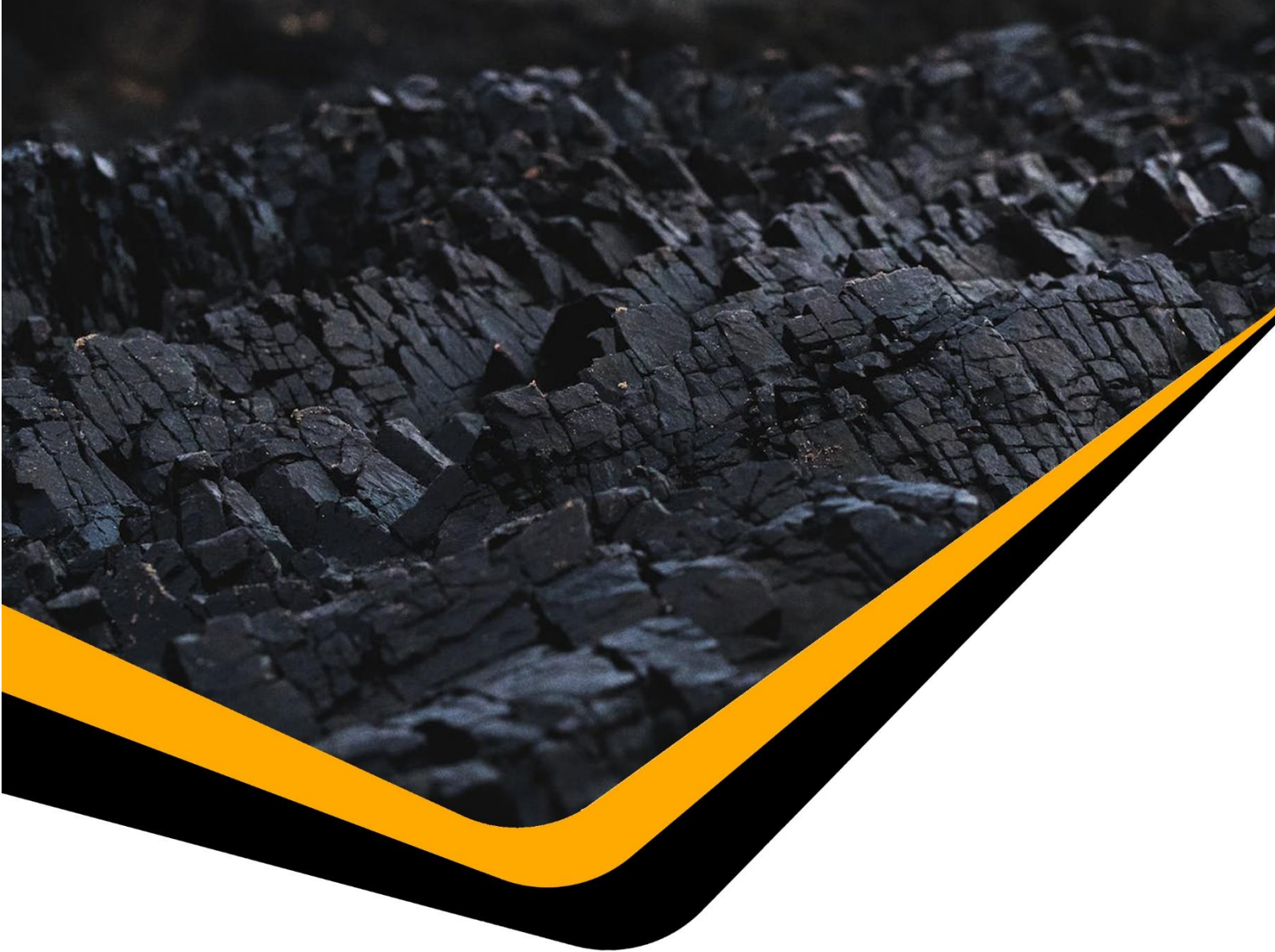
LAB NO.	SAMPLE NO.	STANDARD METHOD		DRY BASIS				DRY, ASH-FREE BASIS				Crucible Swelling Number (CSN)	Coal Caking Index (CKIN)	
		GB/T 212	GB/T 212	GB/T 212	ISO 19579	GB/T 213	GB/T 212	ISO 19579	GB/T 213	GB/T 5448	GB/T 5447			
		Ash (ASH)	Volatile Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Gross Calorific Value (GCV)	Volatile Matter (VOL)	Fixed Carbon (FC)	Total Sulphur (TSUL)	Gross Calorific Value (GCV)				
		%				kcal/kg	%				kcal/kg	5:1	3:3	
1	ETT-SP-30013-1A	24.92	23.25	51.83	0.81	6183	30.96	69.04	1.07	8234	-	16		
2	ETT-SP-30013-1B	22.90	23.70	53.39	1.07	6404	30.75	69.25	1.39	8306	-	15		
3	ETT-SP-30013-1C	25.51	23.34	51.15	1.10	6111	31.34	68.66	1.48	8203	-	16		
4	ETT-SP-30013-1D	24.46	23.71	51.83	1.01	6158	31.39	68.61	1.34	8153	-	13		
5	ETT_SP_30013-2A	22.27	23.97	53.76	0.78	6379	30.83	69.17	1.01	8207	-	14		
6	ETT_SP_30013-2B	29.97	21.83	48.21	1.01	5696	31.17	68.83	1.44	8133	-	14		
7	ETT_SP_30013-2C	28.98	21.79	49.23	0.94	5881	30.68	69.32	1.32	8282	-	10		
8	ETT_SP_30013-2D	23.59	23.77	52.64	0.77	6325	31.11	68.89	1.01	8277	-	12		
9	ETT_SP_30013-3A	23.10	24.98	51.92	0.88	6266	32.48	67.52	1.14	8148	-	16		
10	ETT_SP_30013-3B	22.90	24.45	52.65	0.87	6365	31.71	68.29	1.13	8256	-	15		
11	ETT_SP_30013-3C	24.33	24.15	51.52	1.06	6236	31.92	68.08	1.40	8240	-	17		
12	ETT_SP_30013-3D	24.13	24.29	51.58	0.98	6234	32.01	67.99	1.29	8216	-	17		

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13	ETT_SP_30013-4A	30.66	22.25	47.09	0.99	5632	32.08	67.92	1.43	8123	-	-	15
14	ETT_SP_30013-4B	24.55	22.97	52.48	0.96	6270	30.44	69.56	1.27	8310	-	-	14
15	ETT_SP_30013-4C	24.86	24.28	50.87	0.98	6188	32.31	67.69	1.31	8235	-	-	14
16	ETT_SP_30013-5A	24.40	23.18	52.41	0.91	6211	30.67	69.33	1.20	8216	-	-	16
17	ETT_SP_30013-5B	24.58	23.74	51.69	0.80	6207	31.47	68.53	1.05	8230	-	-	16
18	ETT_SP_30013-5C	27.20	22.59	50.21	0.81	5934	31.03	68.97	1.11	8151	-	-	14
19	ETT_SP_30013-6A	21.58	23.38	55.04	0.97	6475	29.82	70.18	1.23	8257	1.0	-	13
20	ETT_SP_30013-6B	22.89	22.56	54.55	0.58	6446	29.26	70.74	0.75	8360	-	-	13
21	ETT_SP_30013-6C	23.80	22.47	53.73	1.01	6345	29.49	70.51	1.33	8326	-	-	14
22	ETT_SP_30013-7A	24.09	21.75	54.16	2.56	6264	28.65	71.35	3.37	8253	1.0	-	4
23	ETT_SP_30013-7B	23.86	23.05	53.09	0.89	6327	30.28	69.72	1.17	8309	1.0	-	15
24	ETT_SP_30013-8A	25.47	23.41	51.12	0.83	6192	31.41	68.59	1.12	8308	-	-	16
25	ETT_SP_30013-8B	24.06	23.07	52.87	0.70	6315	30.38	69.62	0.92	8316	-	-	15
26	ETT_SP_30013-8C	30.62	23.39	45.99	0.58	5522	33.72	66.28	0.83	7959	-	-	16
27	ETT_SP_30013-T1-1A	41.65	18.69	39.66	0.91	4637	32.03	67.97	1.55	7948	-	-	6
28	ETT_SP_30013-T1-2A	23.34	24.91	51.75	1.00	6423	32.49	67.51	1.31	8378	-	32	-
29	ETT_SP_30013-T2-1A	33.31	20.69	46.00	1.83	5500	31.03	68.97	2.74	8247	-	-	14
30	ETT_SP_30013-T2-1B	27.82	23.31	48.87	0.91	5950	32.29	67.71	1.26	8243	-	-	15
31	ETT_SP_30013-T2-1C	38.25	20.80	40.94	0.72	5034	33.69	66.31	1.17	8152	-	-	13
32	ETT_SP_30013-T2-2A	23.33	24.52	52.14	1.07	6357	31.99	68.01	1.40	8292	-	-	17
33	ETT_SP_30013-T2-2B	30.57	23.18	46.25	0.96	5685	33.39	66.61	1.39	8188	-	-	17
34	ETT_SP_30013-T2-2C	22.85	24.00	53.15	1.13	6397	31.10	68.90	1.47	8293	-	21	-
35	ETT_SP_30013-T2-3A	24.29	25.00	50.72	0.77	6306	33.01	66.99	1.01	8329	-	31	-
36	ETT_SP_30013-T2-3B	25.07	24.85	50.08	0.75	6139	33.16	66.84	1.00	8194	-	-	17
37	ETT_SP_30013-T2-3C	20.96	25.98	53.06	0.85	6612	32.87	67.13	1.08	8345	-	33	-
38	ETT_SP_30013-T2-4A	29.22	23.29	47.49	0.81	5758	32.90	67.10	1.15	8135	-	-	15
39	ETT_SP_30013-T2-4B	32.51	21.34	46.15	0.84	5550	31.62	68.38	1.25	8224	-	-	12
40	ETT_SP_30013-T2-4C	32.16	20.86	46.98	1.05	5649	30.74	69.26	1.55	8327	-	-	12
41	ETT_SP_30013-T2-5A	26.47	24.01	49.51	0.98	6037	32.66	67.34	1.33	8210	-	27	-
42	ETT_SP_30013-T2-5B	31.51	23.01	45.49	0.78	5544	33.59	66.41	1.14	8095	-	-	17
43	ETT_SP_30013-T2-6A	28.66	22.10	49.24	0.80	5928	30.98	69.02	1.13	8309	-	-	15
44	ETT_SP_30013-T2-6B	24.68	23.55	51.78	0.67	6261	31.26	68.74	0.89	8312	-	20	-
45	ETT_SP_30013-T2-7A	23.85	25.82	50.33	0.93	6108	33.90	66.10	1.23	8022	-	-	13
46	ETT_SP_30013-T2-7B	22.86	24.38	52.77	0.88	6146	31.60	68.40	1.14	7967	-	-	0
47	ETT_SP_30013-T2-8A	26.72	23.91	49.37	1.05	5953	32.63	67.37	1.43	8123	-	-	15
48	ETT_SP_30013-T2-8B	23.02	23.15	53.83	0.67	6286	30.07	69.93	0.87	8166	-	-	9
49	ETT_SP_30013-T2-9A	27.32	23.39	49.29	0.81	5953	32.18	67.82	1.11	8191	-	22	-
50	ETT_SP_30013-T3-1A	22.38	24.15	53.46	0.68	6463	31.12	68.88	0.87	8327	-	33	-
51	ETT_SP_30013-T3-1B	27.98	22.41	49.61	0.64	5983	31.11	68.89	0.88	8308	-	-	16
52	ETT_SP_30013-T3-1C	22.67	24.04	53.29	0.77	6533	31.08	68.92	0.99	8448	-	28	-
53	ETT_SP_30013-T3-1D	28.32	22.06	49.62	0.68	5984	30.78	69.22	0.95	8348	-	-	16
54	ETT_SP_30013-T3-2A	24.19	22.72	53.09	0.73	6386	29.97	70.03	0.97	8423	-	-	15
55	ETT_SP_30013-T3-2B	24.97	22.36	52.67	0.59	6299	29.80	70.20	0.79	8395	-	-	16
56	ETT_SP_30013-T3-2C	22.67	24.72	52.61	0.83	6434	31.97	68.03	1.07	8320	-	42	-
57	ETT_SP_30013-T3-2D	21.65	24.82	53.53	0.87	6517	31.68	68.32	1.11	8317	-	30	-
58	ETT_SP_30013-T3-3A	26.22	23.33	50.45	0.91	6191	31.63	68.37	1.23	8391	-	36	-
59	ETT_SP_30013-T3-3B	26.37	23.50	50.13	0.87	6111	31.92	68.08	1.18	8299	-	26	-
60	ETT_SP_30013-T3-3C	27.56	23.40	49.04	0.72	5928	32.30	67.70	0.99	8183	-	-	17
61	ETT_SP_30013-T3-3D	26.62	22.82	50.57	0.76	6110	31.09	68.91	1.03	8326	-	-	17

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.  
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