



**WAGENINGEN EVALUATING PROGRAMS
FOR ANALYTICAL LABORATORIES**

Certificate of Analysis



International Soil-Analytical Exchange

REFERENCE MATERIAL

ISE sample 827



General Information

In this report an overview is given of analytical data for this sample collected in our proficiency testing program. The consensus values are calculated using a robust statistical model. With this NDA model, the mean and standard deviation are calculated using all reported data when at least 4 results are left after removal of reported 'lower than' (<) and 0 (= zero) values. No outliers are removed.

This report is divided into two sections: Consensus Values and Indicative Values. The division is made on the reliability of the data. Consensus Values are based on at least 8 results and a maximum relative uncertainty of 6.25%. Indicative Values are based on a maximum relative uncertainty of 35% and a minimum of 4 and maximum of 7 results, or a relative uncertainty greater than 6.25% when there are at least 8 results.

For each determinand the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median, MAD (Median of Absolute Deviation), the uncertainty of the mean (consensus or indicative) value and the relative uncertainty.

Please note: Most WEPAL-QUASIMEME reference materials are found to be stable over the long term (>10 years) for most determinand/matrix combinations. There are a few exceptions known to us as being less stable over the long term. These are organotins in sediment (MS6), ASP in shellfish (BT7), some PAHs and PCBs in sediment (SETOC) and N-NH₄ (as N) in clay soils (ISE).

All values, expressed on a weight basis (kg or %), are reported as oven-dried (105°C) material. Moisture is reported in the material as received.

Sample information

WEPAL reference materials are from natural sources only. There is no spiking, mixing or other alterations of the samples. For sample preparation, the ISE samples are dried at 40°C and milled to pass a 0.5 mm sieve.

This ISE sample 827 of Clay, from The Netherlands, is prepared for the WEPAL proficiency programs. The sample has been used in 1 period (or round). The results on which the values in this report are based were taken from the period given in the following table:

Year	Round	Number
2025	4	2



Consensus Values ISE 827



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	59.1	4.26	7.2	19	58.3	1.66	1.22	2.07
As	mg/kg	25.5	2.51	9.8	18	25.5	1.57	0.739	2.90
Ba	mg/kg	435	41.6	9.6	15	437	22.8	13.4	3.08
Ca	g/kg	3.84	0.381	9.9	17	3.82	0.250	0.116	3.01
Cd	mg/kg	0.529	0.037	7.0	13	0.533	0.020	0.013	2.42
Co	mg/kg	10.9	1.35	12.5	16	10.7	0.923	0.423	3.90
Cr	mg/kg	84.5	9.65	11.4	22	84.6	5.08	2.57	3.05
Cu	mg/kg	85.3	7.00	8.2	19	85.0	3.50	2.01	2.35
Fe	g/kg	30.8	1.48	4.8	18	30.5	1.20	0.435	1.41
Ga	mg/kg	14.7	1.79	12.2	10	14.7	0.680	0.707	4.81
K	mg/kg	17810	1196	6.7	19	17683	687	343	1.93
Mg	mg/kg	5947	580	9.7	16	5939	290	181	3.05
Mn	mg/kg	514	38.9	7.6	21	508	19.7	10.6	2.06
Na	mg/kg	4973	506	10.2	12	4972	306	183	3.67
Ni	mg/kg	34.5	5.38	15.6	22	34.0	3.17	1.43	4.16
P	mg/kg	1325	120	9.1	16	1305	94.0	37.5	2.83
Pb	mg/kg	99.9	17.3	17.3	19	98.0	7.70	4.96	4.97
Rb	mg/kg	97.1	3.30	3.4	12	97.3	1.35	1.19	1.23
Si	g/kg	322	26.1	8.1	13	328	16.0	9.06	2.81
Sr	mg/kg	75.4	3.82	5.1	15	74.8	1.80	1.23	1.63
Y	mg/kg	23.1	3.04	13.2	13	23.4	1.39	1.06	4.56
Zn	mg/kg	129	9.15	7.1	22	128	3.92	2.44	1.90
Zr	mg/kg	195	17.5	9.0	12	196	9.25	6.33	3.24
C-elementary	g/kg	21.0	0.757	3.6	27	20.9	0.480	0.182	0.867
V	mg/kg	87.4	10.9	12.5	19	87.9	5.40	3.14	3.59
Ti	mg/kg	3688	356	9.7	15	3678	240	115	3.12
N - elementary	g/kg	2.24	0.121	5.4	48	2.25	0.075	0.022	0.972
Ce	mg/kg	58.4	9.58	16.4	11	56.1	6.86	3.61	6.18
La	mg/kg	28.2	2.13	7.5	11	28.0	1.02	0.801	2.84
Th	mg/kg	9.33	1.47	15.7	12	9.30	0.790	0.530	5.68
Hg	µg/kg	517	40.1	7.7	12	502	28.0	14.5	2.80

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	27.4	3.90	14.3	13	27.8	2.93	1.35	4.94
As	mg/kg	22.1	2.33	10.6	23	22.0	1.90	0.608	2.76
Ba	mg/kg	213	19.9	9.4	16	214	11.0	6.23	2.92



Consensus Values ISE 827



Method: Acid extractable (So-called totals)

(cont.)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ca	g/kg	2.97	0.318	10.7	15	2.95	0.172	0.103	3.46
Cd	mg/kg	0.550	0.084	15.3	23	0.540	0.047	0.022	3.98
Co	mg/kg	10.2	0.852	8.4	21	10.1	0.591	0.233	2.29
Cr	mg/kg	54.0	8.93	16.5	23	53.3	4.65	2.33	4.31
Cu	mg/kg	82.5	9.27	11.2	26	82.3	5.22	2.27	2.76
Fe	g/kg	27.1	2.31	8.5	14	27.3	0.892	0.771	2.85
K	mg/kg	4503	796	17.7	16	4381	431	249	5.52
Mg	mg/kg	4550	397	8.7	18	4527	247	117	2.57
Mn	mg/kg	471	41.5	8.8	17	470	26.0	12.6	2.67
N	g/kg	2.26	0.182	8.1	26	2.23	0.115	0.045	1.98
Ni	mg/kg	31.1	2.29	7.4	21	31.2	1.37	0.625	2.01
P	mg/kg	1176	155	13.2	17	1168	95.2	47.0	4.00
Pb	mg/kg	92.1	9.45	10.3	24	91.3	5.59	2.41	2.62
S	mg/kg	374	37.8	10.1	13	369	26.9	13.1	3.50
Zn	mg/kg	120	14.5	12.1	26	118	8.68	3.56	2.97
V	mg/kg	57.4	8.66	15.1	17	56.1	4.85	2.63	4.57
Be	mg/kg	1.35	0.146	10.8	12	1.35	0.083	0.053	3.91
Hg	µg/kg	500	77.9	15.6	17	506	44.1	23.6	4.72

Method: Aqua Regia (ISO 54321) (replacing former ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
As	mg/kg	21.7	1.56	7.2	19	21.8	1.07	0.446	2.05
Ba	mg/kg	201	18.3	9.1	9	205	11.4	7.62	3.80
Ca	g/kg	3.02	0.363	12.0	18	3.13	0.220	0.107	3.54
Cd	mg/kg	0.569	0.068	12.0	24	0.575	0.043	0.017	3.05
Co	mg/kg	9.73	1.34	13.7	24	9.62	0.929	0.341	3.51
Cr	mg/kg	47.9	9.72	20.3	28	47.9	4.88	2.30	4.80
Cu	mg/kg	81.8	11.3	13.8	28	82.3	6.27	2.67	3.26
Fe	g/kg	27.9	2.70	9.7	21	27.6	1.70	0.738	2.64
Hg	µg/kg	538	77.5	14.4	16	528	40.0	24.2	4.50
Mg	mg/kg	4647	718	15.5	19	4755	443	206	4.43
Mn	mg/kg	473	46.3	9.8	24	479	27.8	11.8	2.50
Mo	mg/kg	0.825	0.098	11.9	13	0.802	0.062	0.034	4.11
Ni	mg/kg	30.1	4.44	14.8	28	29.4	2.95	1.05	3.49
P	mg/kg	1227	98.5	8.0	20	1200	73.1	27.5	2.24
Pb	mg/kg	92.0	11.1	12.0	28	93.9	5.25	2.62	2.85
V	mg/kg	54.1	7.14	13.2	13	54.0	5.60	2.48	4.58



Consensus Values ISE 827



Method: Aqua Regia (ISO 54321) (replacing former ISO 11466)									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Zn	mg/kg	116	14.8	12.8	28	115	9.54	3.49	3.02

Method: Extraction with boiling 2M HNO3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	mg/kg	0.597	0.060	10.1	10	0.600	0.039	0.024	3.99
Co	mg/kg	8.32	0.914	11.0	8	8.62	0.340	0.404	4.85
Cr	mg/kg	28.4	3.31	11.7	11	28.5	1.74	1.25	4.40
Cu	mg/kg	86.0	7.61	8.8	11	86.0	2.80	2.87	3.33
Ni	mg/kg	22.3	2.73	12.2	11	22.0	1.50	1.03	4.62
Pb	mg/kg	91.6	12.7	13.9	11	91.5	6.33	4.79	5.23
Zn	mg/kg	101	11.8	11.6	11	99.9	9.10	4.43	4.38

Method: Extraction with 0.01M CaCl2 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	mg/kg	119	9.36	7.9	8	119	4.89	4.14	3.48
N - NH4 (as N)	mg/kg	50.6	3.05	6.0	9	50.7	1.75	1.27	2.51
N - NO3 (as N)	mg/kg	13.7	0.571	4.2	10	13.7	0.370	0.226	1.65

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH - H2O	...	5.17	0.166	3.2	96	5.19	0.111	0.021	0.410
pH - KCl	...	4.20	0.078	1.8	37	4.20	0.040	0.016	0.380
pH - CaCl2	...	4.64	0.059	1.3	29	4.63	0.030	0.014	0.295
Fraction < 2 µm	%	28.6	6.38	22.3	28	28.6	3.62	1.51	5.27
EC-SC (ISO 11265)	mS/m	15.5	3.89	25.0	35	15.7	2.35	0.822	5.28
Fraction < 63 µm	%	69.2	6.35	9.2	16	68.8	3.40	1.98	2.87
Fraction > 63 µm	%	31.5	2.89	9.2	14	31.0	1.64	0.966	3.06
Org.matter (L.O.I.)	%	5.97	0.605	10.1	40	5.90	0.305	0.120	2.00
Fraction < 16 µm	%	59.6	8.32	14.0	10	56.6	4.17	3.29	5.52
TC=Total C (org.+inorg.)	g/kg	21.0	0.996	4.7	38	21.0	0.635	0.202	0.961
TOC=Total Org. C	g/kg	19.9	1.49	7.5	52	19.9	0.728	0.258	1.29
C - org others (W&B a.o.)	g/kg	17.6	2.96	16.8	47	17.8	2.12	0.539	3.06

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Moisture-content	%	2.23	0.306	13.7	49	2.18	0.210	0.055	2.45



Consensus Values ISE 827

Method: Pot. CEC using 1M NH₄-acetate at pH=7

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	18.5	3.56	19.2	35	18.3	2.12	0.753	4.06
K	cmol+/kg	0.682	0.087	12.8	54	0.685	0.054	0.015	2.18
Mg	cmol+/kg	1.28	0.192	15.0	52	1.27	0.115	0.033	2.60
Ca	cmol+/kg	10.8	1.50	13.9	51	10.8	0.870	0.262	2.43

Method: Act. CEC using cobaltihexamine (AFNOR NFX 31 130)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	cmol+/kg	0.775	0.094	12.1	8	0.761	0.060	0.042	5.37
Ca	cmol+/kg	11.4	1.22	10.7	9	11.5	0.496	0.508	4.44
Mg	cmol+/kg	1.47	0.133	9.0	9	1.47	0.074	0.055	3.77

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ca	mg/kg	2189	128	5.9	20	2165	69.7	35.8	1.64
Cu	mg/kg	16.0	2.48	15.5	19	15.9	1.90	0.712	4.44
Fe	mg/kg	567	67.0	11.8	19	551	34.6	19.2	3.39
K	mg/kg	263	13.9	5.3	21	265	10.2	3.78	1.44
Mg	mg/kg	166	9.83	5.9	19	166	5.78	2.82	1.70
Mn	mg/kg	91.7	8.03	8.8	19	89.7	5.47	2.30	2.51
P	mg/kg	199	17.2	8.7	26	195	10.8	4.22	2.12
Zn	mg/kg	12.8	2.16	16.9	20	12.4	1.41	0.603	4.73
Al	mg/kg	1100	74.5	6.8	11	1081	44.2	28.1	2.55

Method: Extraction with 0.01M CaCl₂ - 0.005M DTPA 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	31.8	3.63	11.4	20	31.7	2.21	1.01	3.19
Fe	mg/kg	361	53.5	14.8	19	372	26.8	15.3	4.25
Mn	mg/kg	74.9	5.00	6.7	19	74.4	3.79	1.43	1.92
Zn	mg/kg	10.9	2.36	21.7	20	11.0	1.14	0.660	6.05

Method: Extraction with 1M KCl 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NH ₄ (as N)	mg/kg	87.1	13.9	16.0	13	82.0	6.68	4.83	5.54



Consensus Values ISE 827

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Olsen (as P)	mg/kg	93.3	22.2	23.8	39	92.2	13.2	4.45	4.76

Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K - NH ₄ NO ₃ (1/5)	mg/l	257	16.5	6.4	13	257	11.0	5.72	2.22
Mg - NH ₄ NO ₃ (1/5)	mg/l	158	17.1	10.8	13	156	14.0	5.92	3.75
pH - H ₂ O (2/5)	...	5.09	0.117	2.3	12	5.09	0.067	0.042	0.826

Method: PEP-Ammoniumacetate-EDTA extraction

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
AAE10-Ca	mg/kg	2309	208	9.0	9	2336	86.0	86.7	3.76
AAE10-Mg	mg/kg	157	8.68	5.5	9	156	4.90	3.62	2.30
AAE10-K	mg/kg	262	10.5	4.0	9	260	5.10	4.37	1.67
AAE10-P	mg/kg	113	9.01	7.9	9	117	4.90	3.76	3.31

Method: PEP-Test measurements

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pH-H ₂ O	...	5.26	0.068	1.3	12	5.26	0.040	0.025	0.469

Method: PEP-Physical parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
C-org	%	1.70	0.114	6.7	8	1.71	0.085	0.051	2.98
Humus	%	2.90	0.162	5.6	8	2.87	0.097	0.072	2.46



Indicative Values ISE 827



Method: Real totals

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Br	mg/kg	7.02	1.46	20.9	6	7.00	0.985	0.748	10.7
Mo	mg/kg	0.929	0.273	29.5	11	0.910	0.150	0.103	11.1
S	mg/kg	334	87.7	26.3	10	331	66.6	34.7	10.4
Se	mg/kg	0.513	0.169	32.9	4	0.562	0.090	0.105	20.6
Sn	mg/kg	6.15	2.42	39.3	10	5.75	1.57	0.955	15.5
Sb	mg/kg	1.51	0.392	26.0	8	1.47	0.220	0.173	11.5
Be	mg/kg	2.15	0.166	7.7	4	2.12	0.089	0.104	4.82
Tl	mg/kg	0.659	0.108	16.4	6	0.692	0.045	0.055	8.38
Nb	mg/kg	15.2	3.41	22.4	10	14.7	2.14	1.35	8.86
Nd	mg/kg	25.4	6.93	27.3	9	25.3	2.70	2.89	11.4
Sc	mg/kg	9.85	2.00	20.3	8	10.3	1.03	0.885	8.98
U	mg/kg	2.62	0.473	18.0	9	2.71	0.210	0.197	7.52
Cs	mg/kg	6.18	2.17	35.2	7	6.00	1.30	1.03	16.6
Yb	mg/kg	2.38	0.822	34.5	4	2.42	0.513	0.514	21.6
Sm	mg/kg	5.00	1.19	23.8	6	4.92	0.520	0.607	12.1
Pr	mg/kg	6.54	0.647	9.9	5	6.70	0.063	0.362	5.53
Gd	mg/kg	4.38	1.17	26.6	4	4.25	0.543	0.728	16.6
Dy	mg/kg	3.84	0.907	23.6	4	3.89	0.532	0.567	14.7

Method: Acid extractable (So-called totals)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	16.7	6.68	40.0	11	16.1	3.58	2.52	15.1
Li	mg/kg	39.4	11.9	30.2	4	39.8	6.30	7.44	18.9
Mo	mg/kg	0.714	0.228	31.9	12	0.725	0.195	0.082	11.5
Na	mg/kg	164	73.3	44.6	13	151	51.9	25.4	15.5
Se	mg/kg	0.501	0.087	17.4	8	0.521	0.048	0.039	7.70
Sn	mg/kg	4.11	0.858	20.9	13	4.00	0.360	0.297	7.24
Sr	mg/kg	31.9	6.64	20.8	5	31.0	3.84	3.71	11.6
Sb	mg/kg	1.06	0.114	10.8	6	1.04	0.062	0.058	5.49
Tl	mg/kg	0.411	0.115	27.9	4	0.410	0.074	0.072	17.4
Ti	mg/kg	226	135	59.6	6	226	76.7	68.8	30.4

Method: Aqua Regia (ISO 54321) (replacing former ISO 11466)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	24.5	5.78	23.6	21	23.4	3.65	1.58	6.43
B	mg/kg	14.5	5.27	36.2	6	14.9	2.16	2.69	18.5
Be	mg/kg	1.34	0.114	8.5	7	1.33	0.060	0.054	4.03



Indicative Values ISE 827

Method: Aqua Regia (ISO 54321) (replacing former ISO 11466)

(cont.)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
K	mg/kg	3922	1637	41.7	19	3935	830	469	12.0
Li	mg/kg	35.5	9.58	27.0	7	34.7	4.80	4.53	12.7
Na	mg/kg	123	38.7	31.4	13	124	20.0	13.4	10.9
S	mg/kg	368	64.3	17.5	12	377	36.0	23.2	6.31
Sb	mg/kg	0.965	0.334	34.6	8	1.07	0.159	0.148	15.3
Se	mg/kg	1.02	0.698	68.8	8	0.979	0.410	0.309	30.4
Sn	mg/kg	3.93	0.621	15.8	7	3.99	0.330	0.293	7.46
Sr	mg/kg	21.5	2.68	12.4	7	21.4	1.00	1.26	5.87
Ti	mg/kg	306	95.2	31.1	5	291	55.8	53.2	17.4
Tl	mg/kg	0.313	0.060	19.3	6	0.320	0.034	0.031	9.87

Method: Extraction with boiling 2M HNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Hg	µg/kg	469	87.4	18.6	9	474	35.2	36.4	7.76
Mo	mg/kg	0.189	0.084	44.3	5	0.199	0.069	0.047	24.8

Method: Extraction with 0.1M NaNO₃

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cd	µg/kg	29.1	2.67	9.2	5	29.9	1.20	1.50	5.14
Cu	µg/kg	721	103	14.3	5	743	39.0	57.6	7.98
Ni	µg/kg	399	22.0	5.5	5	397	12.0	12.3	3.07
Pb	µg/kg	48.6	4.38	9.0	4	48.7	2.00	2.74	5.63
Zn	µg/kg	1694	165	9.8	5	1700	104	92.4	5.45

Method: Extraction with 0.01M CaCl₂ 1:10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	µg/kg	1141	110	9.6	5	1153	65.7	61.5	5.39
Fe	mg/kg	2.93	0.806	27.5	4	2.91	0.365	0.504	17.2
Mg	mg/kg	111	2.67	2.4	5	112	1.56	1.49	1.34
Mn	mg/kg	47.7	2.09	4.4	4	47.7	1.59	1.30	2.74
Na	mg/kg	21.3	2.02	9.5	7	21.9	1.28	0.953	4.47
P	mg/kg	2.10	0.232	11.0	7	2.14	0.140	0.110	5.21
Zn	µg/kg	4149	173	4.2	5	4156	56.3	96.5	2.33



Indicative Values ISE 827

Method: Soil characteristics

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
TIC=Tot.Inorg C(as CaCO ₃)	%	0.437	0.590	135.1	20	0.618	0.480	0.165	37.8

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B - Hot water	mg/kg	0.499	0.330	66.2	12	0.510	0.149	0.119	23.9

Method: Fluoride (Swiss standard procedure)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
F - Total	mg/kg	414	171	41.2	4	406	81.0	107	25.7

Method: Pot. CEC using 1M NH₄-acetate at pH=7

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Na	cmol+/kg	0.114	0.038	33.8	41	0.125	0.025	0.007	6.61

Method: Pot. CEC using 1M or 0.1M BaCl₂-TEA at pH=8.1 (ISO 13536 OR BZE)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	27.0	1.78	6.6	4	26.6	0.950	1.11	4.11

Method: Act. CEC using cobaltihexamine (AFNOR NFX 31 130)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CEC	cmol+/kg	14.5	2.14	14.8	8	14.6	1.08	0.946	6.55
Na	cmol+/kg	0.114	0.026	22.7	6	0.119	0.014	0.013	11.6

Method: Mehlich-3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
B	mg/kg	0.253	0.253	99.8	10	0.300	0.150	0.100	39.4
Na	mg/kg	24.0	4.85	20.2	16	24.9	1.86	1.52	6.32

Method: Extraction with 1M KCl 1:10 (w/v)

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
N - NO ₃ (as N)	mg/kg	13.9	4.89	35.2	12	13.5	3.28	1.76	12.7

Method: Phosphorus and related analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P - Bray (as P)	mg/kg	141	48.6	34.3	33	130	33.1	10.6	7.47
P - AL (as P)	mg/kg	171	47.5	27.8	9	186	14.9	19.8	11.6
K - AL (as K)	mg/kg	237	12.2	5.2	4	240	6.50	7.62	3.22



Indicative Values ISE 827



Method: UK Soil Methods

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
P – NaHCO ₃ (1/20)	mg/l	97.4	18.4	18.9	11	91.9	15.1	6.94	7.13

Method: PEP-Water extraction

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
H ₂ O ₁₀ -Mg	mg/kg	12.9	1.27	9.8	7	13.1	0.790	0.598	4.62
H ₂ O ₁₀ -K	mg/kg	42.7	5.21	12.2	7	42.0	4.42	2.46	5.77
H ₂ O ₁₀ -P	mg/kg	9.60	0.496	5.2	7	9.57	0.270	0.234	2.44

Method: PEP-Test measurements

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
CO ₂ -K	K-test	2.47	0.192	7.8	7	2.47	0.110	0.091	3.68
CO ₂ -P	P-test	11.3	0.553	4.9	7	11.2	0.460	0.261	2.31
CC-Mg	Mg-test	11.9	0.536	4.5	7	11.9	0.330	0.253	2.13
pH-CC	...	4.74	0.054	1.1	4	4.74	0.040	0.034	0.708

Method: PEP-Physical parameters

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ton (clay)	%	30.3	1.30	4.3	6	30.1	0.625	0.665	2.20
Schluff (silt)	%	32.3	1.74	5.4	6	32.6	0.785	0.886	2.74
Sand	%	35.4	1.79	5.0	6	35.1	0.850	0.911	2.57
TOC_400	%	1.63	0.219	13.4	7	1.62	0.150	0.103	6.35
ROC_600	%	0.406	0.099	24.3	4	0.404	0.045	0.062	15.2

Method: PEP-Cation Exchange Capacity

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ca	cmol+/kg	10.2	1.88	18.3	5	10.0	1.09	1.05	10.3
Mg	cmol+/kg	1.18	0.022	1.8	5	1.18	0.012	0.012	1.03
Na	cmol+/kg	0.094	0.022	23.2	5	0.093	0.009	0.012	13.0
K	cmol+/kg	0.699	0.322	46.1	5	0.760	0.190	0.180	25.8
H	cmol+/kg	14.0	0.655	4.7	4	13.8	0.350	0.409	2.92
KAK	cmol+/kg	24.7	5.45	22.0	4	25.3	2.58	3.40	13.8
S-Wert	cmol+/kg	12.3	2.07	16.8	4	12.4	1.29	1.29	10.5
BAS	%	49.4	9.05	18.3	4	49.5	4.08	5.65	11.4