WAGENINGEN EVALUATING PROGRAMS

FOR ANALYTICAL LABORATORIES

Certificate of Analysis

BiMEP

International Biomass Exchange Program

REFERENCE MATERIAL

BIMEP sample 441

WAGENINGEN
UNIVERSITY & RESEARCH

BiMEP

Certificate of Analysis BIMEP 441

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.

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 BIMEP samples are dried at 40°C and milled to pass a 0.5 mm sieve.

This BIMEP sample 441 of Potato (tuber) / Solanum tuberosom, from 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
2011	3	4

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Consensus Values BIMEP 441

Method: General Analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Calorific Value (gross)	MJ/kg	17.1	0.237	1.4	12	17.0	0.155	0.086	0.501
Ash	% (m/m)	4.81	0.600	12.5	12	4.90	0.497	0.217	4.50
Moisture	% (m/m)	8.88	0.598	6.7	12	8.83	0.410	0.216	2.43
Volatile Matter	% (m/m)	80.0	2.07	2.6	10	79.8	0.870	0.820	1.02

Method: Elementary Analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cl	g/kg	0.903	0.114	12.6	9	0.889	0.075	0.047	5.26
Carbon (C)	% (m/m)	43.5	0.793	1.8	12	43.4	0.340	0.286	0.658
Hydrogen (H)	% (m/m)	5.96	0.398	6.7	11	5.95	0.210	0.150	2.52
Nitrogen (N)	% (m/m)	1.42	0.077	5.4	11	1.43	0.050	0.029	2.03

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Indicative Values BIMEP 441

Method: Elementary Analysis

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
S	g/kg	1.16	0.352	30.4	10	1.17	0.221	0.139	12.0

Method: Major Elements

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	0.049	0.017	33.6	5	0.050	0.010	0.009	18.8
Fe	g/kg	0.043	0.012	27.6	4	0.045	0.006	0.007	17.3
K	g/kg	18.6	1.74	9.3	5	18.6	0.710	0.971	5.22
Mg	g/kg	0.835	0.122	14.7	5	0.860	0.073	0.068	8.20
Na	g/kg	0.108	0.053	49.2	5	0.100	0.030	0.030	27.5
P	g/kg	2.28	0.154	6.8	5	2.25	0.089	0.086	3.78
Si	g/kg	0.231	0.046	19.8	4	0.228	0.025	0.029	12.4

Method: Minor Elements

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Cu	mg/kg	7.29	0.598	8.2	4	7.41	0.315	0.374	5.13
Mn	mg/kg	5.81	0.935	16.1	5	5.81	0.590	0.523	9.00
Zn	mg/kg	21.4	4.27	19.9	4	21.6	2.03	2.67	12.4
Ti	mg/kg	1.67	0.925	55.2	4	1.81	0.440	0.578	34.5