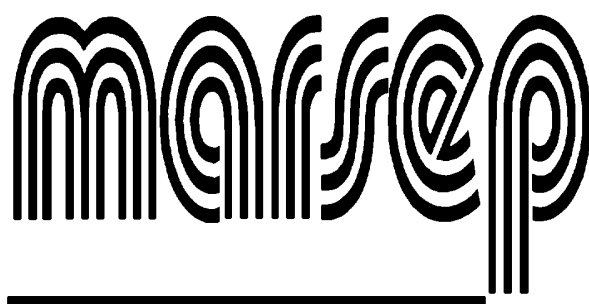




WEPAL-QUASIMEME

Certificate of Analysis



International Manure and Refuse Sample Exchange Program

REFERENCE MATERIAL

MARSEP sample 265

2026-Jul-30

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 measurand 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 measurand/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) & N-NO₃ (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 MARSEP samples are dried at 40°C and milled to pass a 0.5 mm sieve.

This MARSEP sample 265 of Compost, from Switzerland, is prepared for the WEPAL proficiency programs. The sample has been used in 8 rounds. Only results from the last 5 periods are used. This way, the consensus values reflect the latest 'state of the art' analytical techniques used by the laboratories. The results on which the values in this report are based were taken from the rounds given in the following table:

Year	Round	Number
2026	2	3
2025	1	1
2024	2	4
2022	2	2
2019	1	2

Consensus Values MARSEP 265

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Al	g/kg	8.34	2.57	30.9	66	8.36	1.69	0.396	4.75
As	mg/kg	5.48	0.541	9.9	62	5.49	0.335	0.086	1.57
B	mg/kg	27.8	5.09	18.3	46	27.6	2.99	0.939	3.38
Ba	mg/kg	118	16.9	14.4	32	118	11.9	3.74	3.18
Be	µg/kg	412	49.4	12.0	21	420	25.0	13.5	3.27
Ca	g/kg	57.7	3.00	5.2	116	57.7	1.90	0.348	0.603
Cd	mg/kg	0.446	0.041	9.2	112	0.449	0.029	0.005	1.08
Co	mg/kg	4.57	0.381	8.3	100	4.59	0.205	0.048	1.04
Cr	mg/kg	72.0	17.9	24.8	117	70.8	12.2	2.07	2.87
Cu	mg/kg	55.7	3.48	6.2	120	55.7	2.10	0.397	0.713
Fe	g/kg	11.6	1.01	8.7	95	11.6	0.709	0.130	1.12
Hg	µg/kg	155	19.6	12.6	99	156	12.0	2.46	1.58
K	g/kg	13.9	1.57	11.3	132	13.9	1.03	0.171	1.23
Li	mg/kg	12.5	1.48	11.9	12	12.4	1.05	0.534	4.28
Mg	g/kg	8.22	0.490	6.0	125	8.22	0.332	0.055	0.666
Mn	mg/kg	406	21.2	5.2	91	404	13.9	2.78	0.685
Mo	mg/kg	3.76	0.425	11.3	92	3.79	0.235	0.055	1.47
Na	g/kg	0.319	0.089	27.9	75	0.322	0.052	0.013	4.03
Ni	mg/kg	26.4	2.09	7.9	118	26.4	1.35	0.241	0.913
N	g/kg	18.5	0.802	4.3	121	18.5	0.500	0.091	0.492
P	g/kg	3.29	0.211	6.4	135	3.28	0.120	0.023	0.690
Pb	mg/kg	58.7	4.93	8.4	118	58.6	3.18	0.567	0.966
Sb	µg/kg	1266	254	20.1	24	1280	169	64.8	5.12
Sn	mg/kg	4.80	1.02	21.2	23	4.79	0.650	0.265	5.52
Sr	mg/kg	128	10.3	8.0	19	126	4.38	2.94	2.29
V	mg/kg	19.6	4.28	21.9	44	19.2	2.75	0.807	4.12
Zn	mg/kg	187	10.5	5.6	121	187	6.93	1.19	0.637
S	mg/kg	2346	291	12.4	62	2330	193	46.3	1.97
TC =totalC (org+inorg)	g/kg	238	12.0	5.0	36	239	7.33	2.50	1.05
U	mg/kg	0.612	0.065	10.6	9	0.619	0.035	0.027	4.41
TOC =total org.C	g/kg	227	19.5	8.6	10	233	7.50	7.71	3.40
OC = org.C	g/kg	232	16.6	7.2	10	229	7.14	6.56	2.83

Method: Other determinations

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
AOX	mg/kg	45.4	8.21	18.1	18	46.3	4.55	2.42	5.33
loss-on-ignition	%	40.7	0.853	2.1	90	40.7	0.515	0.112	0.276

Consensus Values MARSEP 265

Method: Other determinations									(cont.)
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
residue-on-ignition	%	59.6	0.955	1.6	12	59.6	0.475	0.345	0.579
dry weight	%	94.6	0.436	0.5	52	94.6	0.265	0.076	0.080

Indicative Values MARSEP 265

Method: Inorganic Chemical Composition

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Ag	µg/kg	199	38.9	19.5	13	199	20.0	13.5	6.76
Bi	µg/kg	237	43.5	18.3	4	242	24.0	27.2	11.5
S - SO ₄ (as S)	mg/kg	2222	186	8.4	6	2230	85.1	94.9	4.27
Se	µg/kg	278	145	52.0	28	282	89.1	34.2	12.3
Ti	mg/kg	217	89.9	41.4	10	215	67.1	35.6	16.4
Tl	µg/kg	89.8	34.8	38.7	12	113	19.4	12.6	14.0