QUASIMEME

Quality assurance of information for marine environmental monitoring

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Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 347

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 347

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 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 10 results while the relative uncertainty is smaller than 6.25%. Indicative Values are based on a relative uncertainty of maximum 35% with at least 4 and less than 10 results or a relative uncertainty higher than 6.25%.

For each determinand the following parameters are given: mean, standard deviation, coefficient of variation, number of results, median, MAD (Median of Absolute Deviation) and the uncertainty in the assigned value. The confidence limits (at 95 % probabilty) are calculated for these determinands.

The results of each determinand is expressed on a wet weight basis.

Sample information

QUASIMEME reference materials cover a range of natural Biota species from contaminated waters from the North Sea and/or Mediterranean. The supplied wet test materials are homogenised and sterilised by autoclaving.

This Biota sample 347 of Mussels spiked with BFRs from Commercial mussels from Chile is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the periods given in the following table.

Year.Round	Program	Sample Round Id
2022.2	BT9	QBC073BT
2022.1	BT1	QTM135BT
2019.2	BT9	QBC061BT
2016.2	BT9	QBC049BT
2016.1	BT9	QBC047BT

Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Arsenic	mg/kg	2.22	0.108	4.9	26	2.23	0.078	0.026	2.18 - 2.26
Cadmium	µg/kg	204	12.5	6.1	27	203	8.4	3.0	199 - 209
Chromium	µg/kg	135	13.5	10.0	21	135	9.5	3.7	129 - 141
Cobalt	µg/kg	36.7	3.08	8.4	12	37.1	2.20	1.11	34.8 - 38.6
Copper	µg/kg	1270	71	5.6	28	1260	48	17	1241 - 1296
Iron	mg/kg	29.7	3.34	11.2	18	29.9	2.26	0.99	28.1 - 31.4
Lead	µg/kg	12.6	1.20	9.5	17	12.6	0.82	0.36	12.0 - 13.2
Manganese	µg/kg	1410	102	7.2	16	1400	72	32	1358 - 1467
Nickel	µg/kg	98.8	10.22	10.3	23	99.3	7.30	2.66	94.3 - 103
Selenium	µg/kg	506	41.3	8.2	18	498	28.2	12.2	486 - 526
Zinc	mg/kg	25.4	2.12	8.3	26	25.5	1.45	0.52	24.6 - 26.3

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Dry-weight	%	24.6	0.37	1.5	20	24.6	0.27	0.10	24.44 - 24.78

Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Aluminium	mg/kg	23.1	7.89	34.1	9	21.8	5.57	3.29	17.2 - 29.1
Antimony	µg/kg	1.14	0.198	17.4	5	1.23	0.160	0.111	0.912 - 1.37
Barium	µg/kg	105	22.1	21.1	6	108	16.3	11.3	82.5 - 127
Calcium	mg/kg	327	45.8	14.0	7	333	31.4	21.6	287 - 368
Magnesium	mg/kg	573	47.6	8.3	8	571	33.8	21.0	534 - 611
Mercury	µg/kg	2.08	0.579	27.9	25	2.02	0.420	0.145	1.84 - 2.32
Molybdene	µg/kg	65.2	3.87	5.9	8	65.5	2.90	1.71	62.0 - 68.4
Phosphorus	mg/kg	2240	291	13.0	5	2290	210	163	1902 - 2572
Potassium	mg/kg	1730	121	7.0	6	1740	82	62	1612 - 1854
Silver	µg/kg	2.05	0.332	16.2	6	2.13	0.215	0.169	1.72 - 2.38
Sodium	mg/kg	3250	188	5.8	7	3230	124	89	3077 - 3413
Tin	µg/kg	23.8	7.09	29.8	6	25.3	4.95	3.62	16.7 - 30.9
Uranium	µg/kg	15.3	0.63	4.1	5	15.5	0.50	0.35	14.6 - 16.0
Vanadium	µg/kg	206	11.3	5.5	9	210	7.7	4.7	197 - 214

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.58	0.371	14.4	5	2.65	0.250	0.207	2.16 - 3.01

Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE28	µg/kg	0.510	0.0813	15.9	75	0.518	0.0560	0.0117	0.492 - 0.529
BDE47	µg/kg	2.04	0.242	11.9	80	2.08	0.168	0.034	1.99 - 2.10
BDE66	µg/kg	1.10	0.169	15.4	52	1.13	0.114	0.029	1.05 - 1.15
BDE85	µg/kg	1.03	0.220	21.4	46	1.07	0.157	0.041	0.965 - 1.10
BDE99	µg/kg	0.715	0.1270	17.8	78	0.730	0.0895	0.0180	0.687 - 0.744
BDE100	µg/kg	1.16	0.201	17.3	80	1.17	0.139	0.028	1.11 - 1.20
BDE153	µg/kg	1.09	0.182	16.8	80	1.09	0.124	0.025	1.05 - 1.13
BDE154	µg/kg	0.718	0.1204	16.8	77	0.713	0.0820	0.0172	0.690 - 0.745
BDE183	µg/kg	0.422	0.0872	20.7	61	0.428	0.0615	0.0139	0.399 - 0.444

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE209	µg/kg	0.469	0.1345	28.7	27	0.452	0.0902	0.0323	0.416 - 0.522
a-HBCD	µg/kg	0.0080	0.0040	49.4	7	0.0100	0.0023	0.0019	0.0045 - 0.0116
Total lipid	(%)	2.38	0.232	9.7	8	2.41	0.165	0.102	2.19 - 2.57