QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 350

WAGENINGEN UNIVERSITY & RESEARCH

Certificate of Analysis Biota 350

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 350 of Mussels from Kattegat, Denmark 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
2021.2	BT1	QTM132BT
2018.2	BT1	QTM120BT
2017.1	BT1	QTM114BT

Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Antimony	µg/kg	2.66	0.428	16.1	14	2.80	0.305	0.143	2.41 - 2.91
Arsenic	mg/kg	2.04	0.175	8.6	81	2.04	0.120	0.024	2.01 - 2.08
Barium	µg/kg	6410	762	11.9	15	6480	537	246	5994 - 6832
Cadmium	µg/kg	179	12.4	6.9	88	178	8.5	1.7	176.1 - 181.4
Calcium	mg/kg	490	39.5	8.1	14	490	26.7	13.2	467 - 513
Chromium	µg/kg	186	24.1	13.0	74	185	17.0	3.5	180 - 191
Cobalt	µg/kg	115	11.8	10.2	35	115	8.2	2.5	111.2 - 119.3
Copper	µg/kg	1390	107	7.7	86	1380	72	14	1365 - 1411
Iron	mg/kg	38.3	4.13	10.8	57	37.9	2.78	0.68	37.2 - 39.4
Lead	µg/kg	189	17.3	9.2	83	190	12.0	2.4	185.1 - 192.6
Magnesium	mg/kg	461	24.5	5.3	18	464	16.5	7.2	449 - 473
Manganese	µg/kg	4800	477	10.0	54	4780	324	81	4666 - 4926
Mercury	µg/kg	14.1	2.22	15.7	87	14.3	1.58	0.30	13.6 - 14.6
Molybdene	µg/kg	104	9.7	9.3	23	104	6.6	2.5	100 - 109
Nickel	µg/kg	304	27.5	9.1	77	305	19.0	3.9	297 - 310
Phosphorus	mg/kg	2930	216	7.4	12	2960	150	78	2794 - 3065
Potassium	mg/kg	1630	136	8.4	14	1650	95	46	1550 - 1707
Selenium	µg/kg	633	68.4	10.8	54	627	47.8	11.6	615 - 652
Silver	µg/kg	6.64	0.875	13.2	27	6.74	0.630	0.210	6.29 - 6.98
Sodium	mg/kg	4970	453	9.1	16	4920	310	142	4728 - 5209
Uranium	µg/kg	30.3	2.40	7.9	15	30.0	1.70	0.77	29.0 - 31.6
Vanadium	µg/kg	138	13.1	9.5	37	138	9.3	2.7	133 - 142
Zinc	mg/kg	28.6	2.42	8.4	87	28.9	1.66	0.32	28.1 - 29.1

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Dry-weight	%	22.2	0.27	1.2	57	22.2	0.19	0.04	22.11 - 22.26

Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Aluminium	mg/kg	15.8	4.92	31.2	27	16.4	3.30	1.18	13.8 - 17.7
Gallium	µg/kg	5.94	2.738	46.1	4	7.05	2.050	1.712	2.14 - 9.75
Lithium	µg/kg	62.6	1.62	2.6	5	63.4	1.36	0.91	60.7 - 64.5
Rubidium	µg/kg	708	60.1	8.5	4	711	40.5	37.6	624 - 791
Strontium	µg/kg	4740	301	6.3	7	4840	216	142	4470 - 5008
Thallium	µg/kg	1.82	0.446	24.5	10	1.93	0.310	0.176	1.50 - 2.13
Tin	µg/kg	30.2	12.40	41.0	16	33.6	8.43	3.87	23.7 - 36.8
Titanium	µg/kg	1160	248	21.4	7	1170	154	117	938 - 1381

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Ash-Weight	%	1.94	0.112	5.8	8	1.90	0.080	0.050	1.84 - 2.03

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.62	0.734	28.0	16	2.58	0.515	0.229	2.23 - 3.01