QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 339

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 339

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 339 of Mussels from Unknown (Commercial) 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
2017.2	BT1	QTM116BT
2016.1	BT1	QTM110BT
2015.1	BT1	QTM106BT
2014.2	BT1	QTM104BT

Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Arsenic	mg/kg	3.22	0.297	9.2	143	3.22	0.210	0.031	3.17 - 3.26
Barium	µg/kg	1210	183	15.2	29	1200	133	43	1137 - 1276
Cadmium	µg/kg	303	26.6	8.8	166	301	18.3	2.6	299 - 307
Calcium	mg/kg	410	34.6	8.4	13	410	24.0	12.0	389 - 430
Chromium	µg/kg	186	43.7	23.4	113	190	31.0	5.1	178 - 194
Cobalt	µg/kg	61.0	7.59	12.4	56	61.9	5.61	1.27	59.0 - 63.1
Copper	µg/kg	1360	91	6.7	140	1360	64	10	1340 - 1370
Iron	mg/kg	26.5	3.26	12.3	69	26.9	2.27	0.49	25.8 - 27.3
Lead	µg/kg	63.1	7.42	11.8	142	64.2	5.15	0.78	61.8 - 64.3
Magnesium	mg/kg	516	31.4	6.1	19	516	21.3	9.0	501 - 531
Manganese	µg/kg	1850	147	7.9	67	1860	99	22	1818 - 1890
Mercury	µg/kg	5.81	1.396	24.0	129	6.00	1.000	0.154	5.57 - 6.05
Molybdene	µg/kg	76.0	11.24	14.8	33	78.0	8.30	2.45	72.0 - 80.0
Nickel	µg/kg	180	21.7	12.1	114	183	15.2	2.5	176 - 184
Phosphorus	mg/kg	2160	168	7.8	11	2150	124	63	2046 - 2269
Potassium	mg/kg	1720	112	6.5	14	1730	80	37	1655 - 1783
Selenium	µg/kg	511	66.8	13.1	88	521	46.9	8.9	497 - 525
Silver	µg/kg	4.27	0.910	21.3	36	4.38	0.635	0.189	3.96 - 4.57
Sodium	mg/kg	4060	325	8.0	18	4000	216	96	3900 - 4222
Strontium	µg/kg	4540	385	8.5	10	4570	278	152	4272 - 4815
Uranium	µg/kg	21.6	1.58	7.3	21	21.4	1.10	0.43	20.9 - 22.4
Vanadium	µg/kg	1630	164	10.1	52	1650	115	29	1584 - 1675
Zinc	mg/kg	22.7	1.79	7.9	136	22.8	1.23	0.19	22.35 - 22.96

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Ash-Weight	%	1.69	0.062	3.6	16	1.70	0.041	0.019	1.65 - 1.72
Dry-weight	%	23.7	0.34	1.4	96	23.7	0.24	0.04	23.63 - 23.77

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	2.73	0.320	11.7	24	2.71	0.228	0.082	2.59 - 2.86

Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Aluminium	mg/kg	13.1	5.91	45.2	34	13.8	4.37	1.27	11.0 - 15.1
Antimony	µg/kg	1.94	0.635	32.8	16	1.91	0.435	0.199	1.60 - 2.27
Cesium	µg/kg	3.17	0.204	6.4	4	3.16	0.140	0.128	2.89 - 3.45
Gallium	µg/kg	5.00	1.389	27.8	4	5.00	1.000	0.868	3.07 - 6.93
Lithium	µg/kg	68.7	17.52	25.5	6	78.0	12.96	8.94	51.2 - 86.2
Rubidium	µg/kg	766	55.0	7.2	4	762	37.0	34.4	689 - 842
Sulfur	mg/kg	2720	74	2.7	4	2720	53	46	2621 - 2827
Thallium	µg/kg	1.65	0.542	32.8	12	1.74	0.393	0.196	1.31 - 2.00
Tin	µg/kg	11.5	7.30	63.4	23	12.1	5.17	1.90	8.36 - 14.7
Titanium	µg/kg	1340	514	38.3	8	1430	379	227	923 - 1761

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	2.12	0.425	20.1	5	2.20	0.280	0.238	1.63 - 2.60