QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 334

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis   Biota 334

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 334 of Salmon from Norway 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
2022.1	BT1	QTM134BT
2022.1	BT2	QOR150BT
2020.1	BT2	QOR142BT
2018.1	BT2	QOR134BT
2017.2	BT1	QTM117BT
2014.1	BT2	QOR118BT

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Arsenic	mg/kg	0.538	0.0307	5.7	53	0.539	0.0210	0.0053	0.530	-	0.547
Calcium	mg/kg	78.9	7.87	10.0	10	79.4	5.80	3.11	73.4	-	84.5
Cobalt	µg/kg	4.45	0.876	19.7	17	4.51	0.620	0.266	4.00	-	4.89
Copper	µg/kg	449	39.5	8.8	53	451	27.4	6.8	439	-	460
Iron	mg/kg	4.14	0.682	16.5	36	4.14	0.445	0.142	3.91	-	4.37
Magnesium	mg/kg	273	20.9	7.6	14	270	15.5	7.0	261	-	285
Manganese	µg/kg	75.1	18.65	24.8	25	81.0	13.66	4.66	67.4	-	82.8
Mercury	µg/kg	12.0	1.80	15.1	61	12.1	1.22	0.29	11.5	-	12.4
Molybdene	µg/kg	4.29	0.661	15.4	12	4.42	0.463	0.239	3.87	-	4.71
Nickel	µg/kg	36.8	10.46	28.4	38	39.0	7.14	2.12	33.4	-	40.3
Potassium	mg/kg	3960	244	6.1	10	4000	161	96	3793	-	4136
Selenium	µg/kg	94.3	10.68	11.3	36	94.7	6.94	2.23	90.7	-	97.9
Sodium	mg/kg	418	37.3	8.9	12	419	26.0	13.4	394	-	441
Vanadium	µg/kg	9.78	1.834	18.8	16	9.93	1.335	0.573	8.81	-	10.7
Zinc	mg/kg	3.48	0.374	10.7	58	3.50	0.257	0.061	3.38	-	3.58

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Dry-weight	%	37.1	0.60	1.6	40	37.1	0.40	0.12	36.91	-	37.29

Indicative Values   BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Antimony	µg/kg	8.10	2.099	25.9	10	8.04	1.515	0.830	6.62	-	9.58
Barium	µg/kg	179	84.8	47.4	13	190	60.0	29.4	128	-	230
Chromium	µg/kg	28.7	19.04	66.4	29	32.2	13.72	4.42	21.4	-	35.9
Lead	µg/kg	8.02	5.120	63.8	28	8.92	3.820	1.209	6.04	-	10.0
Phosphorus	mg/kg	2420	144	5.9	8	2450	104	64	2302	-	2537
Strontium	µg/kg	465	64.8	13.9	4	469	45.0	40.5	375	-	555
Tin	µg/kg	977	340.3	34.8	18	986	227.0	100.3	808	-	1145

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Ash-Weight	%	1.11	0.013	1.2	5	1.11	0.010	0.007	1.10	-	1.12

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	16.5	1.15	6.9	9	16.4	0.80	0.48	15.7	-	17.4

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB52	µg/kg	0.432	0.1233	28.5	60	0.478	0.0890	0.0199	0.401	-	0.464
PCB101	µg/kg	0.855	0.1405	16.4	69	0.900	0.1000	0.0211	0.821	-	0.889
PCB105	µg/kg	0.199	0.0409	20.5	37	0.206	0.0280	0.0084	0.185	-	0.213
PCB118	µg/kg	0.665	0.1240	18.6	65	0.708	0.0900	0.0192	0.635	-	0.696
PCB138+PCB163	µg/kg	1.27	0.211	16.5	20	1.28	0.151	0.059	1.18	-	1.37
PCB138	µg/kg	1.21	0.277	22.9	56	1.22	0.196	0.046	1.14	-	1.28
PCB153	µg/kg	1.84	0.357	19.5	72	1.90	0.259	0.053	1.75	-	1.92
PCB180	µg/kg	0.507	0.0762	15.0	64	0.520	0.0525	0.0119	0.488	-	0.526
b-HCH	µg/kg	0.100	0.0271	26.9	33	0.110	0.0173	0.0059	0.0909	-	0.110
HCB	µg/kg	0.949	0.2186	23.0	68	0.949	0.1510	0.0331	0.896	-	1.00
pp'-DDD	µg/kg	1.38	0.267	19.3	63	1.42	0.184	0.042	1.31	-	1.45
pp'-DDE	µg/kg	3.25	0.391	12.0	70	3.26	0.266	0.058	3.16	-	3.35
Transnonachlor	µg/kg	0.690	0.1187	17.2	32	0.680	0.0845	0.0262	0.647	-	0.732

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	16.2	1.04	6.5	39	16.2	0.76	0.21	15.84	-	16.51
Extractable-Lipid	%	16.0	1.25	7.8	25	16.1	0.90	0.31	15.5	-	16.6

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
PCB28	µg/kg	0.185	0.1042	56.4	50	0.194	0.0750	0.0184	0.155 -	0.215
PCB31	µg/kg	0.150	0.0590	39.4	24	0.150	0.0430	0.0150	0.125 -	0.175
PCB156	µg/kg	0.0811	0.0266	32.8	34	0.0835	0.0190	0.0057	0.0718 -	0.0903
a-HCH	µg/kg	0.0801	0.0395	49.3	39	0.0900	0.0300	0.0079	0.0673 -	0.0929
g-HCH	µg/kg	0.0796	0.0810	101.9	30	0.0930	0.0580	0.0185	0.0493 -	0.110
Dieldrin	µg/kg	1.19	0.391	32.7	19	1.22	0.240	0.112	1.01 -	1.38
op'-DDT	µg/kg	0.0482	0.0396	82.2	14	0.0711	0.0304	0.0132	0.0255 -	0.0709
pp'-DDT	µg/kg	0.108	0.0739	68.6	29	0.145	0.0550	0.0171	0.0796 -	0.136
Heptachlor-epoxide (sum)	(µg/kg)	0.200	0.0528	26.4	10	0.198	0.0360	0.0209	0.163 -	0.237
cis-chlordane	(µg/kg)	0.493	0.0581	11.8	9	0.493	0.0430	0.0242	0.449 -	0.537
trans-chlordane	(µg/kg)	0.0988	0.0236	23.9	5	0.0990	0.0170	0.0132	0.0717 -	0.126
Oxychlordane	(µg/kg)	0.0982	0.0186	18.9	5	0.0992	0.0132	0.0104	0.0769 -	0.120