QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 378

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 378

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 determinand 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.

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 378 of Roach from Hollands Diep, the Netherlands 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
2024.1	BT1	QTM144BT
2024.1	BT10	QPF035BT
2024.1	BT2	QOR159BT
2024.1	BT9	QBC080BT

Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mercury	µg/kg	81.7	11.0	13.5	30	82.9	6.50	2.51	3.08
Copper	µg/kg	773	51.0	6.6	25	773	27.2	12.8	1.65
Cadmium	µg/kg	3.68	0.562	15.3	20	3.79	0.338	0.157	4.27
Selenium	µg/kg	428	37.5	8.8	22	435	23.6	10.0	2.34
Arsenic	mg/kg	0.123	0.018	14.9	23	0.120	0.011	0.005	3.89
Zinc	mg/kg	14.8	1.59	10.7	26	15.1	1.15	0.390	2.63
Molybdene	µg/kg	11.4	0.560	4.9	8	11.4	0.442	0.247	2.17

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dry-weight	%	22.6	0.272	1.2	16	22.7	0.135	0.085	0.377

Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Aluminium	mg/kg	1.56	0.735	47.3	15	1.47	0.466	0.237	15.3
Lead	µg/kg	13.2	4.59	34.8	21	13.8	2.47	1.25	9.48
Cobalt	µg/kg	6.90	1.69	24.4	14	7.17	1.07	0.563	8.16
Iron	mg/kg	8.32	2.66	31.9	18	8.94	2.16	0.783	9.41
Manganese	µg/kg	648	174	26.9	20	668	153	48.7	7.52
Chromium	µg/kg	57.2	25.1	43.9	22	59.1	16.3	6.69	11.7
Nickel	µg/kg	23.6	10.9	46.3	16	25.6	7.74	3.42	14.5
Vanadium	µg/kg	13.6	2.98	21.9	9	13.7	1.72	1.24	9.14
Tin	µg/kg	28.9	12.2	42.4	8	30.6	6.56	5.41	18.7
Sodium	mg/kg	353	98.4	27.9	7	353	41.5	46.5	13.2
Magnesium	mg/kg	239	4.06	1.7	7	240	1.37	1.92	0.802
Phosphorus	mg/kg	2195	401	18.3	5	2200	120	224	10.2
Potassium	mg/kg	3304	229	6.9	7	3273	127	108	3.27
Calcium	mg/kg	337	123	36.5	6	324	87.8	62.9	18.6
Strontium	µg/kg	709	302	42.6	6	780	211	154	21.7
Antimony	µg/kg	1.01	0.423	41.8	7	1.21	0.422	0.200	19.8
Barium	µg/kg	197	55.4	28.1	10	206	39.5	21.9	11.1
Thallium	µg/kg	2.30	0.402	17.5	6	2.28	0.294	0.205	8.93
Uranium	µg/kg	0.142	0.078	55.0	5	0.150	0.040	0.044	30.7

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	2.04	0.447	21.9	5	2.03	0.370	0.250	12.2

Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pp'-DDE	µg/kg	9.66	1.34	13.9	12	9.49	0.759	0.485	5.02
PCB28	µg/kg	2.90	0.467	16.1	13	2.90	0.246	0.162	5.59
PCB101	µg/kg	34.6	5.73	16.6	12	34.6	3.70	2.07	5.98
PCB105	µg/kg	2.75	0.398	14.5	9	2.77	0.180	0.166	6.03
PCB153	µg/kg	65.5	7.95	12.1	12	63.4	3.30	2.87	4.38
PCB180	µg/kg	15.2	2.71	17.8	13	14.6	1.32	0.938	6.16

Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Transnonachlor	µg/kg	0.137	0.025	18.0	5	0.150	0.014	0.014	10.1
Dieldrin	µg/kg	0.244	0.038	15.4	4	0.254	0.018	0.023	9.62
pp'-DDD	µg/kg	1.78	0.391	21.9	10	1.73	0.220	0.154	8.65
HCB	µg/kg	3.08	0.932	30.3	11	2.87	0.670	0.351	11.4
b-HCH	µg/kg	0.088	0.051	57.9	5	0.082	0.023	0.029	32.4
PCB52	µg/kg	14.2	2.63	18.6	13	14.3	1.70	0.913	6.44
PCB118	µg/kg	17.4	3.82	22.0	12	17.2	1.78	1.38	7.94
PCB156	µg/kg	1.99	0.317	16.0	9	2.00	0.180	0.132	6.65
PCB31	µg/kg	1.64	0.573	34.9	5	1.70	0.360	0.321	19.5
PCB138	µg/kg	33.3	9.15	27.5	10	31.8	4.85	3.62	10.9
PCB194	(µg/kg)	1.60	0.365	22.8	4	1.60	0.164	0.228	14.3
PCB187	(µg/kg)	18.0	2.02	11.2	5	18.1	1.18	1.13	6.27
PCB170	(µg/kg)	5.52	1.07	19.4	7	5.78	0.738	0.506	9.17
PCB110	(µg/kg)	21.9	2.85	13.0	4	22.0	1.35	1.78	8.13

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	1.77	0.278	15.8	6	1.76	0.186	0.142	8.05

Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE28	µg/kg	0.224	0.080	35.7	8	0.221	0.059	0.035	15.8
BDE47	µg/kg	3.90	1.17	29.9	10	3.84	0.735	0.461	11.8
BDE99	µg/kg	0.010	0.005	48.1	6	0.013	0.003	0.003	24.6
BDE100	µg/kg	1.20	0.426	35.4	9	1.30	0.235	0.178	14.7
BDE153	µg/kg	0.159	0.033	20.6	9	0.159	0.020	0.014	8.58
BDE154	µg/kg	0.406	0.126	31.1	9	0.435	0.044	0.053	13.0

Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	3.61	1.44	39.9	9	3.60	1.07	0.600	16.6
PFOSA	µg/kg	0.108	0.026	24.2	4	0.115	0.010	0.016	15.1
PFDA	µg/kg	0.250	0.063	25.3	8	0.248	0.035	0.028	11.2
PFDoA	µg/kg	0.235	0.114	48.4	6	0.280	0.069	0.058	24.7
PFTrDA	µg/kg	0.290	0.122	42.0	4	0.335	0.061	0.076	26.2
PFTeDA	µg/kg	0.394	0.186	47.3	6	0.395	0.089	0.095	24.1
total-PFOS	µg/kg	4.04	0.925	22.9	10	3.99	0.389	0.365	9.04
total-PFHxS	µg/kg	0.077	0.034	44.2	4	0.091	0.016	0.021	27.6