QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 335

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis   Biota 335

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 335 of Dab from Westerscheldt, 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
2023.2	BT10	QPF032BT
2020.2	BT2	QOR144BT
2019.1	BT1	QTM122BT
2019.1	BT10	QPF014BT
2016.2	BT1	QTM113BT
2014.2	BT2	QOR120BT
2014.1	BT9	QBC039BT

Consensus Values   BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Mercury	µg/kg	204	19.1	9.4	64	204	11.5	3.0	199	-	208
Copper	µg/kg	218	38.9	17.8	55	225	23.0	6.5	208	-	229
Iron	mg/kg	1.67	0.422	25.3	32	1.65	0.312	0.093	1.52	-	1.82
Selenium	µg/kg	312	43.6	14.0	40	320	26.0	8.6	298	-	326
Arsenic	mg/kg	7.52	0.728	9.7	59	7.50	0.400	0.118	7.33	-	7.71
Chromium	µg/kg	146	50.3	34.5	50	151	29.7	8.9	132	-	160
Nickel	µg/kg	44.8	15.28	34.1	47	49.0	9.90	2.79	40.3	-	49.3
Zinc	mg/kg	5.10	0.557	10.9	60	5.21	0.395	0.090	4.96	-	5.25
Sodium	mg/kg	1436	133.9	9.3	13	1464	64.0	46.4	1356	-	1517
Magnesium	mg/kg	303	27.7	9.2	14	308	16.0	9.3	287	-	319
Potassium	mg/kg	3334	107.5	3.2	11	3351	61.0	40.5	3263	-	3406
Molybdene	µg/kg	4.72	0.756	16.0	11	4.52	0.397	0.285	4.22	-	5.22

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Dry-weight	%	21.9	0.75	3.4	42	21.8	0.40	0.14	21.68	-	22.15

Indicative Values   BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Aluminium	mg/kg	0.460	0.3258	70.9	17	0.580	0.2200	0.0988	0.293	-	0.626
Lead	µg/kg	6.81	3.624	53.2	33	7.44	2.358	0.788	5.53	-	8.09
Cobalt	µg/kg	3.73	0.942	25.2	21	4.00	0.600	0.257	3.31	-	4.16
Manganese	µg/kg	87.2	31.29	35.9	32	91.2	18.81	6.91	76.0	-	98.5
Lithium	µg/kg	-	-	-	4	25.1	4.1	-	-	-	-
Vanadium	µg/kg	3.42	3.271	95.5	14	3.79	2.085	1.093	1.55	-	5.30
Tin	µg/kg	963	439.6	45.7	15	832	287.9	141.9	721	-	1205
Phosphorus	mg/kg	1977	294.6	14.9	8	2033	177.0	130.2	1737	-	2217
Calcium	mg/kg	261	61.0	23.4	11	260	45.0	23.0	220	-	301
Rubidium	µg/kg	-	-	-	5	631	21.0	-	-	-	-
Strontium	µg/kg	-	-	-	5	1143	206.0	-	-	-	-
Antimony	µg/kg	8.51	2.749	32.3	15	9.13	2.765	0.887	7.00	-	10.0
Cesium	µg/kg	-	-	-	4	13.0	1.0	-	-	-	-
Barium	µg/kg	183	76.1	41.6	12	202	40.4	27.5	135	-	231
Bismuth	µg/kg	-	-	-	4	6.10	0.8	-	-	-	-

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Ash-Weight	%	-	-	-	5	1.21	0.0	-	-	-	-

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	1.50	0.566	37.8	10	1.47	0.395	0.224	1.10	-	1.90

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
n-PFHxS	µg/kg	0.334	0.0625	18.7	14	0.335	0.0295	0.0209	0.299	-	0.370
total-PFOS	µg/kg	2.91	0.533	18.3	15	3.14	0.402	0.172	2.62	-	3.21

Indicative Values   BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
n-PFOS	µg/kg	2.80	0.628	22.4	18	2.77	0.360	0.185	2.48	-	3.11
PFOSA	µg/kg	0.464	0.1123	24.2	12	0.483	0.0765	0.0405	0.393	-	0.535
PFHxA	µg/kg	-	-	-	4	0.0750	0.1	-	-	-	-
PFHpA	µg/kg	-	-	-	5	0.0500	0.0	-	-	-	-
PFNA	µg/kg	0.0997	0.0364	36.5	13	0.110	0.0221	0.0126	0.0779	-	0.121
PFDA	µg/kg	0.253	0.0925	36.5	16	0.258	0.0575	0.0289	0.204	-	0.302
PFUnDA	µg/kg	0.140	0.0444	31.8	14	0.146	0.0325	0.0148	0.114	-	0.165
total-PFHxS	µg/kg	-	-	-	5	0.348	0.1	-	-	-	-

Consensus Values   BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
pp'-DDE	µg/kg	0.818	0.1736	21.2	41	0.830	0.1190	0.0339	0.763	-	0.873
PCB52	µg/kg	0.461	0.1210	26.3	39	0.479	0.0830	0.0242	0.421	-	0.500
PCB101	µg/kg	1.18	0.255	21.6	41	1.17	0.155	0.050	1.10	-	1.26
PCB118	µg/kg	1.18	0.190	16.2	41	1.16	0.131	0.037	1.12	-	1.24
PCB138+PCB163	µg/kg	1.96	0.161	8.2	11	1.98	0.090	0.061	1.86	-	2.07
PCB153	µg/kg	3.78	0.681	18.0	42	3.70	0.415	0.131	3.56	-	3.99
PCB180	µg/kg	0.454	0.1131	24.9	40	0.458	0.0710	0.0223	0.418	-	0.490
PCB138	µg/kg	1.79	0.439	24.6	33	1.72	0.248	0.095	1.63	-	1.94

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	1.53	0.366	23.9	25	1.59	0.180	0.092	1.38	-	1.68
Extractable-Lipid	%	1.46	0.185	12.7	13	1.49	0.090	0.064	1.35	-	1.57

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Transnonachlor	µg/kg	0.0501	0.0226	45.1	15	0.0630	0.0170	0.0073	0.0377 -	0.0625
Dieldrin	µg/kg	0.294	0.1577	53.7	12	0.330	0.0980	0.0569	0.194 -	0.393
pp'-DDT	µg/kg	0.0409	0.0330	80.8	17	0.0650	0.0240	0.0100	0.0240 -	0.0577
pp'-DDD	µg/kg	0.136	0.0408	30.1	33	0.139	0.0210	0.0089	0.121 -	0.150
HCB	µg/kg	0.160	0.0628	39.2	38	0.170	0.0400	0.0127	0.139 -	0.181
PCB28	µg/kg	0.102	0.0367	36.0	33	0.105	0.0240	0.0080	0.0890 -	0.115
PCB105	µg/kg	0.213	0.0698	32.8	29	0.218	0.0380	0.0162	0.187 -	0.240
PCB156	µg/kg	0.0823	0.0337	41.0	24	0.0890	0.0225	0.0086	0.0681 -	0.0965
PCB31	µg/kg	0.0703	0.0304	43.3	13	0.0759	0.0139	0.0105	0.0521 -	0.0885