



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 335



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 % probability) 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
2020.2	BT2	QOR144BT
2019.1	BT1	QTM122BT
2019.1	BT10	QPF014BT
2016.2	BT1	QTM113BT
2014.2	BT2	QOR120BT



Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Arsenic	mg/kg	7.51	0.585	7.8	59	7.50	0.400	0.095	7.36	- 7.67
Chromium	µg/kg	145	41.6	28.8	50	151	29.7	7.4	133	- 156
Cobalt	µg/kg	3.68	0.790	21.5	21	4.00	0.600	0.215	3.32	- 4.04
Copper	µg/kg	218	32.7	15.0	55	225	23.0	5.5	209	- 227
Iron	mg/kg	1.67	0.436	26.1	32	1.65	0.312	0.096	1.51	- 1.83
Magnesium	mg/kg	303	23.3	7.7	14	308	16.0	7.8	289	- 316
Mercury	µg/kg	203	16.2	8.0	64	204	11.5	2.5	199	- 207
Molybdene	µg/kg	4.65	0.566	12.2	11	4.52	0.397	0.213	4.28	- 5.03
Nickel	µg/kg	44.5	13.02	29.3	47	49.0	9.90	2.37	40.6	- 48.3
Potassium	mg/kg	3340	87	2.6	11	3350	61	33	3282	- 3397
Selenium	µg/kg	312	37.3	12.0	40	320	26.0	7.4	300	- 324
Sodium	mg/kg	1450	96	6.6	13	1460	64	33	1394	- 1509
Zinc	mg/kg	5.10	0.552	10.8	60	5.21	0.395	0.089	4.96	- 5.24

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Dry-weight	%	21.9	0.61	2.8	42	21.8	0.40	0.12	21.68	- 22.06



Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Aluminium	mg/kg	0.460	0.2915	63.4	17	0.580	0.2200	0.0884	0.311	-	0.609
Antimony	µg/kg	8.72	3.748	43.0	15	9.13	2.765	1.210	6.65	-	10.8
Barium	µg/kg	184	57.1	31.1	12	202	40.4	20.6	148	-	220
Bismuth	µg/kg	5.39	0.197	3.7	4	5.47	0.150	0.123	5.12	-	5.67
Calcium	mg/kg	261	60.8	23.3	11	260	45.0	22.9	220	-	301
Cesium	µg/kg	13.0	1.35	10.4	4	13.0	0.95	0.84	11.1	-	14.8
Lead	µg/kg	6.75	3.245	48.1	33	7.44	2.358	0.706	5.60	-	7.90
Lithium	µg/kg	23.3	5.55	23.8	4	25.1	4.05	3.47	15.6	-	31.0
Manganese	µg/kg	87.2	27.58	31.6	32	91.2	18.81	6.09	77.3	-	97.1
Phosphorus	mg/kg	1990	245	12.3	8	2030	177	108	1791	-	2189
Rubidium	µg/kg	621	27.4	4.4	5	631	21.0	15.3	590	-	653
Strontium	µg/kg	1140	278	24.4	5	1140	206	155	818	-	1457
Tin	µg/kg	964	441.3	45.8	15	832	287.9	142.4	721	-	1206
Titanium	µg/kg	82.7	45.13	54.6	6	98.7	35.39	23.03	37.6	-	128
Vanadium	µg/kg	3.25	2.854	87.7	14	3.79	2.085	0.953	1.62	-	4.89

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Ash-Weight	%	1.21	0.017	1.4	5	1.21	0.014	0.010	1.19	-	1.23

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	1.50	0.549	36.6	10	1.47	0.395	0.217	1.11	-	1.89



Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
PCB52	µg/kg	0.460	0.1168	25.4	39	0.479	0.0830	0.0234	0.423	-	0.498
PCB101	µg/kg	1.18	0.223	18.9	41	1.17	0.155	0.044	1.11	-	1.25
PCB118	µg/kg	1.18	0.186	15.8	41	1.16	0.131	0.036	1.12	-	1.24
PCB138+PCB163	µg/kg	1.95	0.129	6.6	11	1.98	0.090	0.048	1.87	-	2.04
PCB138	µg/kg	1.78	0.372	20.9	33	1.72	0.248	0.081	1.65	-	1.91
PCB153	µg/kg	3.78	0.600	15.9	42	3.70	0.415	0.116	3.59	-	3.96
PCB180	µg/kg	0.456	0.1049	23.0	40	0.458	0.0710	0.0207	0.423	-	0.490
pp'-DDD	µg/kg	0.135	0.0319	23.6	33	0.139	0.0210	0.0069	0.124	-	0.147
pp'-DDE	µg/kg	0.818	0.1733	21.2	41	0.830	0.1190	0.0338	0.764	-	0.873

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	1.55	0.270	17.4	25	1.59	0.180	0.068	1.44	-	1.66
Extractable-Lipid	%	1.47	0.126	8.6	13	1.49	0.090	0.044	1.39	-	1.54



Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
PCB28	µg/kg	0.102	0.0346	33.8	33	0.105	0.0240	0.0075	0.0899	- 0.114
PCB31	µg/kg	0.0707	0.0225	31.9	13	0.0759	0.0139	0.0078	0.0572	- 0.0842
PCB105	µg/kg	0.214	0.0580	27.1	29	0.218	0.0380	0.0135	0.192	- 0.236
PCB156	µg/kg	0.0823	0.0331	40.2	24	0.0890	0.0225	0.0084	0.0683	- 0.0962
HCB	µg/kg	0.160	0.0573	35.8	38	0.170	0.0400	0.0116	0.141	- 0.179
Dieldrin	µg/kg	0.287	0.1448	50.4	12	0.330	0.0980	0.0523	0.196	- 0.379
op'-DDT	µg/kg	0.0145	0.0112	77.5	8	0.0190	0.0085	0.0050	0.0053	- 0.0237
pp'-DDT	µg/kg	0.0396	0.0282	71.2	17	0.0650	0.0240	0.0086	0.0252	- 0.0541
Transnonachlor	µg/kg	0.0507	0.0253	49.9	15	0.0630	0.0170	0.0082	0.0368	- 0.0646



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	2.72	0.544	20.0	8	2.77	0.360	0.240	2.28	-	3.17
total-PFOS	µg/kg	2.84	0.478	16.8	5	2.74	0.342	0.267	2.29	-	3.39
PFOSA	µg/kg	0.524	0.1201	22.9	4	0.593	0.0750	0.0750	0.357	-	0.691
PFNA	µg/kg	0.107	0.0403	37.5	8	0.117	0.0311	0.0178	0.0746	-	0.140
PFDA	µg/kg	0.262	0.0915	34.9	8	0.283	0.0670	0.0404	0.187	-	0.337
PFUnDA	µg/kg	0.148	0.0390	26.4	7	0.155	0.0270	0.0184	0.113	-	0.183
PFDoA	µg/kg	0.0243	0.0107	44.0	4	0.0280	0.0080	0.0067	0.0095	-	0.0392
L-PFHxS	µg/kg	0.328	0.0831	25.3	8	0.334	0.0595	0.0367	0.261	-	0.396