



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 376



Certificate of Analysis Biota 376

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 376 of Herring from Herring from the Baltic Sea 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	BT2	QOR157BT
2023.1	BT1	QTM140BT



Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Mercury	µg/kg	16.0	0.56	3.5	25	16.1	0.27	0.14	15.73	-	16.19
Copper	µg/kg	665	32.9	4.9	20	662	19.5	9.2	650	-	680
Cadmium	µg/kg	33.2	3.58	10.8	20	32.9	2.08	1.00	31.5	-	34.8
Iron	mg/kg	22.3	2.60	11.6	15	22.1	1.36	0.84	20.9	-	23.8
Manganese	µg/kg	2084	256.2	12.3	16	2069	176.4	80.1	1948	-	2220
Selenium	µg/kg	391	32.4	8.3	16	392	21.6	10.1	374	-	409
Arsenic	mg/kg	1.45	0.093	6.4	21	1.44	0.059	0.025	1.41	-	1.49
Chromium	µg/kg	64.5	11.19	17.3	16	63.3	7.63	3.50	58.6	-	70.4
Nickel	µg/kg	33.8	5.58	16.5	16	34.4	3.40	1.75	30.9	-	36.8
Zinc	mg/kg	21.1	1.79	8.5	21	21.3	0.80	0.49	20.3	-	21.9

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Dry-weight	%	30.7	0.66	2.1	16	30.7	0.34	0.21	30.39	-	31.09



Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Aluminium	mg/kg	-	-	-	4	1.05	0.7	-	-	-	-
Lead	µg/kg	8.72	2.069	23.7	12	8.94	1.103	0.747	7.41	-	10.0
Cobalt	µg/kg	7.11	1.094	15.4	9	7.20	0.610	0.456	6.28	-	7.93
Lithium	µg/kg	-	-	-	4	8.63	0.9	-	-	-	-
Silver	µg/kg	-	-	-	5	10.0	9.2	-	-	-	-
Vanadium	µg/kg	6.94	0.772	11.1	6	7.07	0.495	0.394	6.17	-	7.71
Tin	µg/kg	-	-	-	4	26.5	9.3	-	-	-	-
Sodium	mg/kg	-	-	-	4	929	49.5	-	-	-	-
Magnesium	mg/kg	334	69.9	20.9	6	333	28.9	35.7	264	-	404
Potassium	mg/kg	-	-	-	4	3351	178.3	-	-	-	-
Calcium	mg/kg	-	-	-	4	4401	415.5	-	-	-	-
Molybdene	µg/kg	11.3	0.71	6.3	7	11.4	0.50	0.34	10.6	-	11.9
Barium	µg/kg	-	-	-	4	105	4.7	-	-	-	-
Thallium	µg/kg	-	-	-	4	1.23	0.0	-	-	-	-
Uranium	µg/kg	-	-	-	4	2.50	0.1	-	-	-	-

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	-	-	-	5	12.6	0.3	-	-	-	-



Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
pp'-DDE	µg/kg	19.6	1.42	7.3	13	19.5	0.79	0.49	18.7	-	20.4
HCB	µg/kg	3.40	0.471	13.8	15	3.51	0.304	0.152	3.14	-	3.66
PCB52	µg/kg	0.763	0.1243	16.3	18	0.775	0.0770	0.0366	0.702	-	0.825
PCB101	µg/kg	1.90	0.213	11.2	18	1.89	0.137	0.063	1.79	-	2.01
PCB118	µg/kg	1.52	0.185	12.2	17	1.50	0.100	0.056	1.42	-	1.61
PCB153	µg/kg	5.76	0.738	12.8	18	5.71	0.500	0.217	5.39	-	6.12
PCB180	µg/kg	1.36	0.204	15.0	18	1.39	0.123	0.060	1.26	-	1.46
PCB138	µg/kg	3.72	0.738	19.8	17	3.70	0.384	0.224	3.34	-	4.10

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	12.6	0.68	5.4	10	12.6	0.47	0.27	12.1	-	13.1



Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
a-HCH	µg/kg	0.679	0.3235	47.6	10	0.675	0.2095	0.1279	0.451	-	0.907
g-HCH	µg/kg	0.107	0.0425	39.6	7	0.110	0.0210	0.0201	0.0694	-	0.145
Transnonachlor	µg/kg	3.51	0.160	4.6	6	3.53	0.108	0.081	3.35	-	3.66
Dieldrin	µg/kg	-	-	-	4	2.21	0.4	-	-	-	-
pp'-DDD	µg/kg	4.67	1.362	29.2	12	4.75	0.776	0.492	3.81	-	5.52
b-HCH	µg/kg	0.730	0.0787	10.8	8	0.754	0.0453	0.0348	0.666	-	0.794
PCB28	µg/kg	0.259	0.0751	29.0	15	0.260	0.0400	0.0243	0.218	-	0.301
PCB105	µg/kg	0.417	0.0835	20.0	11	0.410	0.0441	0.0315	0.362	-	0.473
PCB156	µg/kg	0.217	0.0620	28.6	9	0.217	0.0370	0.0259	0.170	-	0.264
PCB31	µg/kg	0.184	0.0809	44.0	7	0.200	0.0360	0.0382	0.112	-	0.256
cis-chlordane	(µg/kg)	-	-	-	5	0.390	0.0	-	-	-	-
Oxychlordane	(µg/kg)	-	-	-	4	1.55	0.2	-	-	-	-
PCB187	(µg/kg)	-	-	-	5	1.00	0.2	-	-	-	-
PCB170	(µg/kg)	0.430	0.0427	9.9	6	0.441	0.0270	0.0218	0.387	-	0.473