



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, 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 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
2023.1	BT1	QTM140BT
2023.2	BT2	QOR157BT
2024.2	BT9	QBC081BT



Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mercury	µg/kg	16.0	0.555	3.5	25	16.1	0.270	0.139	0.869
Copper	µg/kg	665	32.8	4.9	20	662	19.5	9.18	1.38
Cadmium	µg/kg	33.2	3.58	10.8	20	32.9	2.08	1.00	3.02
Iron	mg/kg	22.3	2.59	11.6	15	22.1	1.36	0.836	3.74
Manganese	µg/kg	2084	256	12.3	16	2069	176	80.0	3.84
Selenium	µg/kg	391	32.3	8.3	16	392	21.6	10.1	2.58
Arsenic	mg/kg	1.45	0.093	6.4	21	1.44	0.059	0.025	1.75
Chromium	µg/kg	64.5	11.2	17.3	16	63.3	7.63	3.49	5.41
Nickel	µg/kg	33.8	5.58	16.5	16	34.4	3.40	1.74	5.15
Zinc	mg/kg	21.1	1.78	8.4	21	21.3	0.800	0.485	2.30

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dry-weight	%	30.7	0.660	2.1	16	30.7	0.340	0.206	0.671



Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Lead	µg/kg	8.71	2.06	23.7	12	8.94	1.10	0.744	8.54
Cobalt	µg/kg	7.11	1.09	15.4	9	7.20	0.610	0.456	6.42
Lithium	µg/kg	8.65	1.87	21.7	4	8.63	0.850	1.17	13.5
Vanadium	µg/kg	6.94	0.773	11.1	6	7.07	0.495	0.394	5.68
Tin	µg/kg	20.4	6.16	30.1	4	20.0	2.80	3.85	18.8
Sodium	mg/kg	905	92.6	10.2	4	929	49.5	57.9	6.40
Magnesium	mg/kg	334	69.9	20.9	6	333	28.9	35.7	10.7
Potassium	mg/kg	3422	339	9.9	4	3351	178	212	6.19
Calcium	mg/kg	4620	784	17.0	4	4401	415	490	10.6
Molybdene	µg/kg	11.3	0.713	6.3	7	11.4	0.500	0.337	2.99
Barium	µg/kg	103	8.94	8.7	4	105	4.70	5.58	5.44
Thallium	µg/kg	1.22	0.036	2.9	4	1.23	0.019	0.022	1.82
Uranium	µg/kg	2.45	0.123	5.0	4	2.45	0.055	0.077	3.13

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	12.3	0.687	5.6	5	12.6	0.330	0.384	3.11



Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
pp'-DDE	µg/kg	19.6	1.42	7.3	13	19.5	0.790	0.493	2.52
HCB	µg/kg	3.40	0.470	13.8	15	3.51	0.304	0.152	4.46
b-HCH	µg/kg	0.730	0.079	10.8	8	0.754	0.045	0.035	4.77
PCB52	µg/kg	0.764	0.124	16.3	18	0.775	0.077	0.037	4.79
PCB101	µg/kg	1.90	0.212	11.2	18	1.89	0.137	0.063	3.29
PCB118	µg/kg	1.52	0.184	12.1	17	1.50	0.100	0.056	3.68
PCB153	µg/kg	5.76	0.737	12.8	18	5.71	0.500	0.217	3.77
PCB180	µg/kg	1.36	0.204	15.0	18	1.39	0.123	0.060	4.42
PCB138	µg/kg	3.72	0.736	19.8	17	3.70	0.384	0.223	5.99

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	12.6	0.676	5.4	10	12.6	0.470	0.267	2.12



Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
α-HCH	µg/kg	0.678	0.321	47.4	10	0.675	0.210	0.127	18.7
γ-HCH	µg/kg	0.107	0.043	39.6	7	0.110	0.021	0.020	18.7
Transnonachlor	µg/kg	3.51	0.160	4.6	6	3.53	0.108	0.081	2.32
Dieldrin	µg/kg	2.17	0.718	33.0	4	2.21	0.440	0.449	20.7
pp'-DDD	µg/kg	4.67	1.36	29.1	12	4.75	0.776	0.490	10.5
PCB28	µg/kg	0.259	0.075	28.9	15	0.260	0.040	0.024	9.32
PCB105	µg/kg	0.417	0.084	20.0	11	0.410	0.044	0.032	7.55
PCB156	µg/kg	0.217	0.062	28.6	9	0.217	0.037	0.026	11.9
PCB31	µg/kg	0.184	0.081	44.1	7	0.200	0.036	0.038	20.8
cis-chlordane	(µg/kg)	0.396	0.040	10.1	5	0.390	0.024	0.022	5.65
Oxychlordane	(µg/kg)	1.57	0.403	25.7	4	1.55	0.180	0.252	16.1
PCB187	(µg/kg)	0.996	0.330	33.1	5	1.00	0.189	0.185	18.5
PCB170	(µg/kg)	0.430	0.043	9.9	6	0.441	0.027	0.022	5.07



Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE47	µg/kg	0.322	0.038	11.9	12	0.325	0.022	0.014	4.30



Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE28	µg/kg	0.009	0.004	46.1	6	0.010	0.002	0.002	23.5
BDE99	µg/kg	0.071	0.044	61.7	9	0.082	0.018	0.018	25.7
BDE100	µg/kg	0.080	0.013	15.9	10	0.082	0.007	0.005	6.27
BDE153	µg/kg	0.015	0.005	32.8	7	0.017	0.003	0.002	15.5
BDE154	µg/kg	0.043	0.027	61.6	8	0.056	0.020	0.012	27.2
BDE66	µg/kg	0.015	0.002	10.8	4	0.015	0.001	0.001	6.77
Total lipid	(%)	12.4	0.134	1.1	6	12.4	0.077	0.068	0.551