



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 372



Certificate of Analysis Biota 372

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 372 of Cod liver from Commercial market (origin: Iceland) 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
2022.2	BT1	QTM137BT
2021.2	BT10	QPF025BT
2024.2	BT2	QOR160BT
2021.2	BT2	QOR149BT



Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Copper	µg/kg	4120	382	9.3	19	4150	236	110	2.66
Cadmium	µg/kg	502	33.4	6.7	19	506	17.9	9.59	1.91
Cobalt	µg/kg	7.67	0.687	9.0	8	7.87	0.363	0.304	3.96
Iron	mg/kg	8.51	1.12	13.2	9	8.77	0.610	0.468	5.50
Manganese	µg/kg	532	54.6	10.3	9	547	29.2	22.7	4.27
Selenium	µg/kg	600	41.2	6.9	12	594	20.3	14.9	2.48
Arsenic	mg/kg	4.67	0.489	10.5	18	4.71	0.272	0.144	3.09
Zinc	mg/kg	12.4	1.02	8.3	18	12.3	0.606	0.301	2.43

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dry-weight	%	68.2	1.27	1.9	11	68.0	0.670	0.479	0.702



Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mercury	µg/kg	20.9	6.72	32.1	19	21.0	4.00	1.93	9.22
Lead	µg/kg	3.61	1.92	53.2	12	4.07	1.05	0.693	19.2
Chromium	µg/kg	22.5	13.0	57.5	11	25.0	8.83	4.89	21.7
Nickel	µg/kg	26.0	11.1	42.6	12	27.3	5.50	3.99	15.4
Silver	µg/kg	202	39.2	19.4	7	202	20.6	18.5	9.18
Vanadium	µg/kg	49.5	4.17	8.4	5	50.0	1.67	2.33	4.72
Molybdene	µg/kg	62.6	9.50	15.2	7	66.0	5.57	4.49	7.17

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	61.9	5.00	8.1	5	60.5	3.73	2.79	4.51



Consensus Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Transnonachlor	µg/kg	29.9	2.82	9.4	13	29.3	1.90	0.977	3.27
pp'-DDE	µg/kg	71.9	9.08	12.6	24	71.4	5.20	2.32	3.22
HCB	µg/kg	25.3	4.81	19.0	23	26.4	4.03	1.25	4.96
PCB28	µg/kg	2.32	0.362	15.6	20	2.29	0.195	0.101	4.37
PCB52	µg/kg	7.63	1.29	16.9	22	7.76	0.777	0.343	4.49
PCB101	µg/kg	10.2	1.48	14.6	22	10.5	0.886	0.396	3.88
PCB105	µg/kg	3.76	0.345	9.2	13	3.84	0.142	0.119	3.18
PCB118	µg/kg	12.8	1.15	9.0	21	12.9	0.600	0.315	2.45
PCB153	µg/kg	25.7	3.66	14.3	22	26.0	2.70	0.975	3.80
PCB156	µg/kg	0.972	0.073	7.5	12	0.989	0.045	0.026	2.71
PCB180	µg/kg	6.42	0.457	7.1	21	6.35	0.284	0.125	1.94
PCB138	µg/kg	18.4	2.31	12.6	19	18.6	1.39	0.663	3.60
cis-chlordane	(µg/kg)	19.5	3.16	16.3	11	20.0	2.22	1.19	6.12
trans-chlordane	(µg/kg)	3.74	0.227	6.1	11	3.76	0.182	0.085	2.29

Method: Lipids - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	58.0	3.28	5.7	16	57.9	1.94	1.03	1.77
Extractable-Lipid	%	60.0	1.07	1.8	9	59.9	0.800	0.447	0.744



Indicative Values BT2

Method: Chlorinated organics - BT2

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
a-HCH	µg/kg	0.662	0.147	22.3	19	0.660	0.085	0.042	6.39
g-HCH	µg/kg	0.093	0.060	64.8	9	0.112	0.041	0.025	27.0
Dieldrin	µg/kg	20.8	5.30	25.5	9	20.4	3.40	2.21	10.6
pp'-DDD	µg/kg	28.3	9.39	33.1	22	29.2	5.79	2.50	8.83
b-HCH	µg/kg	0.376	0.153	40.6	16	0.407	0.073	0.048	12.7
PCB138+PCB163	µg/kg	19.8	0.827	4.2	5	19.7	0.400	0.462	2.33
PCB31	µg/kg	0.993	0.417	42.0	10	1.00	0.265	0.165	16.6
Heptachlor-epoxide (sum)	(µg/kg)	2.92	0.758	26.0	6	2.99	0.429	0.387	13.3
Oxychlordan	(µg/kg)	5.22	1.19	22.8	13	4.96	0.636	0.413	7.90
PCB187	(µg/kg)	5.59	0.436	7.8	4	5.56	0.200	0.272	4.87
PCB170	(µg/kg)	2.33	0.275	11.8	5	2.36	0.210	0.153	6.59
PCB128	(µg/kg)	3.07	0.209	6.8	4	3.04	0.096	0.130	4.26
PCB99	(µg/kg)	9.65	1.93	20.0	4	9.54	0.930	1.21	12.5



Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	0.195	0.024	12.4	4	0.196	0.011	0.015	7.73
PFDA	µg/kg	0.077	0.031	40.4	4	0.077	0.014	0.019	25.2
PFUnDA	µg/kg	0.324	0.240	74.1	7	0.350	0.126	0.113	35.0
PFTTrDA	µg/kg	0.291	0.057	19.7	6	0.291	0.026	0.029	10.1
total-PFOS	µg/kg	0.228	0.063	27.7	6	0.231	0.035	0.032	14.1