



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 375



Certificate of Analysis Biota 375

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 375 of Mussel tissue spiked with contaminants from Kattegat, Denmark 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	BT10	QPF031BT
2023.1	BT4	QPH110BT
2025.1	BT8	QSP093BT
2023.1	BT8	QSP086BT
2023.1	BT9	QBC076BT



Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Pyrene	µg/kg	4.41	0.751	17.0	14	4.41	0.378	0.251	5.69
Fluoranthene	µg/kg	8.39	1.63	19.5	16	8.44	1.11	0.510	6.08
Benzo[a]anthracene	µg/kg	3.16	0.543	17.2	15	3.23	0.432	0.175	5.55
Anthracene	µg/kg	3.57	0.535	15.0	14	3.54	0.280	0.179	5.02
Acenaphthylene	µg/kg	19.4	2.68	13.8	8	18.8	1.47	1.19	6.11



Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Chrysene + Triphenylene	µg/kg	4.73	0.968	20.5	4	4.66	0.459	0.605	12.8
Benzo[e]pyrene	µg/kg	2.93	1.43	48.8	4	2.94	0.648	0.893	30.5
Indeno[1,2,3-cd]pyrene	µg/kg	0.399	0.121	30.4	8	0.417	0.065	0.054	13.4
Phenanthrene	µg/kg	9.72	2.14	22.0	15	9.67	1.33	0.689	7.09
Benzo[g,h,i]perylene	µg/kg	0.677	0.119	17.5	10	0.684	0.080	0.047	6.92
Benzo[b]fluoranthene	µg/kg	2.66	0.544	20.4	11	2.57	0.337	0.205	7.70
Benzo[a]pyrene	µg/kg	1.59	0.334	21.0	15	1.61	0.260	0.108	6.77
Naphthalene	µg/kg	5.80	1.88	32.3	10	5.48	1.11	0.741	12.8
Dibenz[ah]anthracene	µg/kg	1.17	0.297	25.5	8	1.14	0.190	0.131	11.3
Benzo[k]fluoranthene	µg/kg	2.54	0.572	22.5	9	2.75	0.416	0.238	9.37
Fluorene	µg/kg	1.69	0.255	15.1	8	1.76	0.211	0.113	6.67
2-methylphenanthrene	µg/kg	0.912	0.408	44.8	4	0.903	0.270	0.255	28.0
Chrysene	µg/kg	3.36	0.970	28.8	13	3.24	0.460	0.336	10.00
Acenaphthene	µg/kg	4.26	1.17	27.4	10	4.24	0.691	0.462	10.8

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	2.85	0.253	8.9	6	2.82	0.115	0.129	4.53



Consensus Values BT8

Method: Organometals - BT8

Element

Tributyltin (TBT)

Unit
µg Sn/kg

Mean
22.6

Std.Dev.
3.81

CV %
16.8

N
17

Median
23.1

MAD
2.19

Uncertainty
1.16

Rel.Uncert. %
5.11



Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dibutyltin (DBT)	µg Sn/kg	5.62	1.26	22.3	15	5.73	0.589	0.405	7.21
Monobutyltin (MBT)	µg Sn/kg	8.46	3.20	37.8	15	8.77	1.73	1.03	12.2
Triphenyltin (TPhT)	µg Sn/kg	1.71	0.760	44.4	11	1.88	0.550	0.286	16.7



Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE28	µg/kg	1.90	0.408	21.5	7	1.87	0.226	0.193	10.1
BDE47	µg/kg	2.22	0.448	20.2	7	2.19	0.260	0.212	9.55
BDE99	µg/kg	2.08	0.602	28.9	7	2.21	0.375	0.285	13.7
BDE100	µg/kg	2.13	0.482	22.7	7	2.17	0.286	0.228	10.7
BDE153	µg/kg	2.03	0.305	15.0	7	1.94	0.290	0.144	7.09
BDE154	µg/kg	2.07	0.466	22.5	7	2.05	0.211	0.220	10.6
BDE183	µg/kg	2.17	0.614	28.3	7	2.29	0.410	0.290	13.4
BDE66	µg/kg	2.61	0.405	15.5	6	2.51	0.172	0.207	7.91
BDE85	µg/kg	2.31	0.148	6.4	5	2.31	0.083	0.083	3.59
Total lipid	(%)	3.02	0.686	22.7	4	3.17	0.358	0.429	14.2



Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	12.5	2.61	20.8	5	12.6	1.60	1.46	11.6
PFOSA	µg/kg	9.52	1.15	12.1	6	9.60	0.575	0.589	6.18
PFBA	µg/kg	1.47	0.396	27.0	4	1.59	0.210	0.248	16.9
PFPeA	µg/kg	1.83	0.282	15.4	5	1.90	0.100	0.158	8.63
PFHxA	µg/kg	19.4	2.35	12.1	7	19.2	1.23	1.11	5.73
PFHpA	µg/kg	2.96	0.644	21.8	7	2.94	0.440	0.304	10.3
PFOA	µg/kg	12.8	0.903	7.1	7	13.0	0.500	0.427	3.33
PFNA	µg/kg	2.18	0.328	15.0	7	2.20	0.120	0.155	7.10
PFDA	µg/kg	2.11	0.225	10.7	7	2.10	0.100	0.106	5.04
PFUnDA	µg/kg	3.90	0.495	12.7	7	3.93	0.300	0.234	5.99
PFDoA	µg/kg	12.0	0.336	2.8	7	12.0	0.200	0.159	1.33
PFTriDA	µg/kg	1.85	1.16	62.4	7	1.76	0.660	0.546	29.5
PFTeDA	µg/kg	2.84	0.483	17.0	7	3.00	0.260	0.228	8.03
n-PFBS	µg/kg	1.89	0.243	12.9	6	1.90	0.145	0.124	6.59
n-PFHxS	µg/kg	4.35	0.595	13.7	6	4.39	0.440	0.304	6.98
n-PFHps	µg/kg	0.292	0.044	15.0	4	0.295	0.020	0.027	9.40
total-PFOS	µg/kg	14.0	1.48	10.5	6	14.0	1.01	0.753	5.37