



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 317



Certificate of Analysis Biota 317

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 317 of Mussels from Oostende harbor, Belgium 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	BT4	QPH111BT
2021.2	BT4	QPH103BT
2021.2	BT8	QSP079BT
2021.2	BT9	QBC069BT



Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Pyrene	µg/kg	9.40	1.337	14.2	37	9.58	0.760	0.275	8.95	-	9.84
Benzo[g,h,i]perylene	µg/kg	2.28	0.565	24.8	39	2.36	0.337	0.113	2.09	-	2.46
Fluoranthene	µg/kg	11.7	2.35	20.1	42	11.8	1.39	0.45	11.0	-	12.5
Benzo[a]anthracene	µg/kg	4.99	1.300	26.1	36	5.06	0.805	0.271	4.55	-	5.43
Benzo[b]fluoranthene	µg/kg	4.77	1.184	24.8	36	4.82	0.690	0.247	4.37	-	5.17
Chrysene	µg/kg	4.81	1.201	25.0	32	4.83	0.755	0.265	4.38	-	5.24

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	1.97	0.160	8.1	16	1.92	0.080	0.050	1.88	-	2.05



Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Chrysene + Triphenylene	µg/kg	6.00	0.996	16.6	8	6.15	0.615	0.440	5.19	-	6.81
Benzo[e]pyrene	µg/kg	6.15	1.502	24.4	20	6.17	0.877	0.420	5.45	-	6.85
Indeno[1,2,3-cd]pyrene	µg/kg	1.58	0.541	34.3	34	1.57	0.395	0.116	1.39	-	1.77
Phenanthrene	µg/kg	7.49	2.364	31.6	38	7.60	1.475	0.479	6.72	-	8.27
Benzo[a]pyrene	µg/kg	1.59	0.570	35.8	43	1.63	0.327	0.109	1.42	-	1.77
Naphthalene	µg/kg	1.91	1.927	100.9	26	2.43	1.295	0.472	1.13	-	2.69
Dibenz[ah]anthracene	µg/kg	0.374	0.1970	52.7	26	0.394	0.1604	0.0483	0.294	-	0.453
Benzo[k]fluoranthene	µg/kg	2.08	0.686	33.0	34	2.16	0.375	0.147	1.84	-	2.32
Anthracene	µg/kg	0.799	0.4987	62.4	38	0.935	0.3350	0.1011	0.635	-	0.962
Fluorene	µg/kg	1.87	0.830	44.4	32	1.91	0.543	0.183	1.57	-	2.17
Acenaphthylene	µg/kg	0.508	0.4263	83.9	21	0.450	0.2600	0.1163	0.314	-	0.701
Benzo[a]fluorene	µg/kg	-	-	-	4	1.90	0.4	-	-	-	-
Dibenzothiophene	µg/kg	0.637	0.3245	50.9	15	0.614	0.2163	0.1047	0.458	-	0.816
3-6-dimethylphenanthrene	µg/kg	-	-	-	5	1.58	0.3	-	-	-	-
2-methylphenanthrene	µg/kg	2.99	0.895	30.0	9	3.10	0.430	0.373	2.31	-	3.66
1-methylpyrene	µg/kg	1.23	0.265	21.6	6	1.31	0.212	0.135	0.962	-	1.49
Perylene	µg/kg	1.71	0.906	53.1	13	1.70	0.389	0.314	1.16	-	2.25
Triphenylene	µg/kg	2.02	0.357	17.7	6	1.98	0.162	0.182	1.66	-	2.37
Acenaphthene	µg/kg	0.976	0.4745	48.6	31	1.057	0.3030	0.1065	0.802	-	1.15
1-methylnaphtalene	µg/kg	0.762	0.2951	38.7	12	0.768	0.1635	0.1065	0.576	-	0.947
2-methylnaphtalene	µg/kg	0.953	0.5119	53.7	11	1.070	0.3222	0.1929	0.613	-	1.29
C1-phenanthren.+ anthracen.	µg/kg	10.5	1.71	16.3	7	11.0	1.07	0.81	8.99	-	12.1
C2-phenanthren.+ anthracen.	µg/kg	15.8	6.19	39.3	8	16.3	4.43	2.74	10.7	-	20.8
C1-pyrenes+fluoranthenes	µg/kg	13.4	1.55	11.5	6	13.9	0.69	0.79	11.9	-	15.0
C1-chrysenes	µg/kg	4.20	1.596	38.0	6	4.23	0.975	0.814	2.61	-	5.80
C2-chrysenes	µg/kg	-	-	-	4	6.58	2.5	-	-	-	-
Benzo[fluoranthenes (a+b+j+k)	µg/kg	-	-	-	5	8.72	1.4	-	-	-	-
1-methylphenanthrene	µg/kg	1.82	0.509	28.0	10	1.87	0.213	0.201	1.46	-	2.18
C1-Dibenzothiophenes	µg/kg	1.43	0.748	52.5	6	1.47	0.329	0.382	0.678	-	2.17
C2-Dibenzothiophenes	µg/kg	4.96	1.510	30.4	6	4.76	0.848	0.771	3.45	-	6.47
C3-Dibenzothiophenes	µg/kg	5.79	1.914	33.1	6	5.90	1.269	0.977	3.88	-	7.70



Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Tributyltin (TBT)	µg Sn/kg	1.28	0.408	31.8	9	1.36	0.240	0.170	0.974	- 1.59
Dibutyltin (DBT)	µg Sn/kg	2.23	0.955	42.8	9	2.30	0.470	0.398	1.51	- 2.95
Monobutyltin (MBT)	µg Sn/kg	3.16	1.310	41.5	9	2.85	0.695	0.546	2.17	- 4.15



Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE47	µg/kg	0.245	0.0412	16.8	13	0.242	0.0220	0.0143	0.220 - 0.270
BDE99	µg/kg	0.0837	0.0144	17.2	13	0.0880	0.0088	0.0050	0.0750 - 0.0923



Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
BDE28	µg/kg	0.0118	0.0056	47.5	10	0.0136	0.0037	0.0022	0.0079	- 0.0158
BDE100	µg/kg	0.0612	0.0160	26.2	13	0.0670	0.0072	0.0056	0.0516	- 0.0708
BDE153	µg/kg	-	-	-	5	0.0180	0.0	-	-	-
BDE154	µg/kg	0.0185	0.0110	59.1	8	0.0234	0.0055	0.0048	0.0096	- 0.0275
BDE66	µg/kg	-	-	-	5	0.0174	0.0	-	-	-
Total lipid	(%)	2.03	0.270	13.3	8	2.07	0.140	0.119	1.81	- 2.25