



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
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		
Fluoranthene	µg/kg	12.4	2.25	18.2	23	12.0	1.53	0.59	11.4	-	13.3
Pyrene	µg/kg	9.38	1.045	11.1	22	9.61	0.745	0.279	8.92	-	9.84



Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Acenaphthene	µg/kg	0.951	0.5501	57.8	20	1.135	0.4255	0.1538	0.695	- 1.21
Acenaphthylene	µg/kg	0.633	0.5073	80.1	13	0.738	0.3593	0.1759	0.329	- 0.937
Anthracene	µg/kg	0.814	0.5351	65.8	21	0.950	0.4060	0.1460	0.571	- 1.06
Benzo[a]anthracene	µg/kg	4.91	1.163	23.7	21	4.90	0.749	0.317	4.38	- 5.44
Benzo[a]pyrene	µg/kg	1.54	0.445	28.9	24	1.65	0.327	0.114	1.35	- 1.72
Benzo[b]fluoranthene	µg/kg	4.79	1.134	23.7	21	4.86	0.798	0.309	4.28	- 5.31
Benzo[e]pyrene	µg/kg	5.77	1.452	25.2	13	5.87	0.894	0.503	4.90	- 6.64
Benzo[g,h,i]perylene	µg/kg	2.21	0.643	29.1	23	2.36	0.440	0.167	1.93	- 2.49
Benzo[k]fluoranthene	µg/kg	2.27	0.729	32.2	20	2.24	0.429	0.204	1.93	- 2.61
Chrysene	µg/kg	5.05	1.170	23.2	18	5.40	0.834	0.345	4.47	- 5.63
Chrysene + Triphenylene	µg/kg	5.64	0.877	15.6	5	5.50	0.600	0.490	4.63	- 6.65
Dibenz[ah]anthracene	µg/kg	0.436	0.1690	38.8	15	0.450	0.1200	0.0546	0.343	- 0.529
Dibenzothiophene	µg/kg	0.652	0.2466	37.8	10	0.657	0.1550	0.0975	0.479	- 0.826
Fluorene	µg/kg	1.92	1.037	53.9	20	1.98	0.743	0.290	1.44	- 2.41
Indeno[1,2,3-cd]pyrene	µg/kg	1.57	0.548	34.8	19	1.55	0.386	0.157	1.31	- 1.83
Naphthalene	µg/kg	2.30	2.464	107.4	16	2.86	1.833	0.770	0.990	- 3.60
Perylene	µg/kg	1.46	0.617	42.3	9	1.48	0.420	0.257	0.993	- 1.92
Phenanthrene	µg/kg	7.17	2.122	29.6	22	7.60	1.535	0.566	6.23	- 8.10
1-methylnaphtalene	µg/kg	0.854	0.3236	37.9	7	0.820	0.2460	0.1529	0.565	- 1.14
2-methylnaphtalene	µg/kg	0.983	0.4403	44.8	6	1.100	0.2956	0.2247	0.544	- 1.42
1-methylphenanthrene	µg/kg	1.92	0.329	17.2	5	1.98	0.227	0.184	1.54	- 2.30
2-methylphenanthrene	µg/kg	3.24	0.330	10.2	4	3.25	0.215	0.206	2.78	- 3.70
C1-phenanthrenes/anthracenes	µg/kg	10.3	1.96	19.1	4	10.3	1.29	1.23	7.57	- 13.0
C2-phenanthrenes/anthracenes	µg/kg	15.5	7.84	50.7	4	16.0	5.21	4.90	4.59	- 26.4

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits	
Total-Lipid	%	1.96	0.136	6.9	8	2.00	0.107	0.060	1.85	- 2.07



Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Dibutyltin (DBT)	µg Sn/kg	2.27	0.719	31.6	9	2.30	0.470	0.299	1.73	-	2.81
Monobutyltin (MBT)	µg Sn/kg	3.02	1.066	35.3	9	2.85	0.695	0.444	2.22	-	3.82
Tributyltin (TBT)	µg Sn/kg	1.29	0.372	28.9	9	1.36	0.240	0.155	1.01	-	1.57



Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
BDE47	µg/kg	0.246	0.0318	12.9	13	0.242	0.0220	0.0110	0.227 - 0.265
BDE99	µg/kg	0.0841	0.0129	15.3	13	0.0880	0.0088	0.0045	0.0764 - 0.0919
BDE100	µg/kg	0.0632	0.0111	17.5	13	0.0670	0.0072	0.0038	0.0566 - 0.0699



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	0.0048	41.1	10	0.0136	0.0037	0.0019	0.0084 - 0.0152
BDE66	µg/kg	0.0115	0.0053	46.4	5	0.0157	0.0033	0.0030	0.0054 - 0.0176
BDE154	µg/kg	0.0192	0.0088	45.9	8	0.0234	0.0055	0.0039	0.0120 - 0.0264
Total lipid	(%)	2.02	0.216	10.7	8	2.07	0.140	0.096	1.84 - 2.20