QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 319

WAGENINGEN UNIVERSITY & RESEARCH

Certificate of Analysis Biota 319

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 % probabilty) 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 319 of Mussel spiked 2 from Commercial mussels spiked with organics 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	BT8	QSP087BT
2021.2	BT4	QPH104BT
2018.1	BT4	QPH089BT

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Phenanthrene	µg/kg	15.0	4.17	27.8	40	15.8	2.42	0.82	13.7 - 16.3
Pyrene	µg/kg	11.0	2.02	18.5	38	11.2	1.38	0.41	10.3 - 11.6
Benzo[g,h,i]perylene	µg/kg	2.55	0.657	25.8	40	2.60	0.385	0.130	2.34 - 2.76
Fluoranthene	µg/kg	16.6	2.94	17.7	43	16.5	2.11	0.56	15.7 - 17.5
Benzo[a]anthracene	µg/kg	3.14	0.778	24.8	39	3.22	0.478	0.156	2.89 - 3.39
Benzo[b]fluoranthene	µg/kg	3.97	0.862	21.7	36	4.13	0.453	0.180	3.67 - 4.26
Benzo[a]pyrene	µg/kg	1.85	0.492	26.6	44	1.93	0.247	0.093	1.70 - 2.00
Dibenz[ah]anthracene	µg/kg	1.40	0.370	26.5	30	1.45	0.213	0.084	1.26 - 1.54
Benzo[k]fluoranthene	µg/kg	2.38	0.524	22.0	33	2.40	0.321	0.114	2.19 - 2.56
Chrysene	µg/kg	4.87	1.179	24.2	32	4.83	0.685	0.261	4.44 - 5.29

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Total-Lipid	%	1.95	0.278	14.3	17	2.00	0.170	0.084	1.81 - 2.09

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	5.92	1.221	20.6	12	6.11	0.820	0.441	5.15 - 6.69
Benzo[e]pyrene	µg/kg	4.62	1.664	36.0	19	4.59	0.877	0.477	3.82 - 5.42
Indeno[1,2,3-cd]pyrene	µg/kg	2.14	0.734	34.3	37	2.20	0.397	0.151	1.89 - 2.38
Naphthalene	µg/kg	2.42	1.307	54.1	25	2.67	0.705	0.327	1.88 - 2.95
Anthracene	µg/kg	1.67	0.544	32.6	38	1.80	0.375	0.110	1.49 - 1.85
Fluorene	µg/kg	3.02	0.961	31.8	33	3.12	0.590	0.209	2.68 - 3.36
Acenaphthylene	µg/kg	0.899	0.2814	31.3	27	0.929	0.1590	0.0677	0.788 - 1.01
Dibenzothiophene	µg/kg	2.54	0.730	28.7	13	2.59	0.421	0.253	2.11 - 2.98
3-6-dimethylphenanthrene	µg/kg	1.11	0.248	22.4	6	1.13	0.156	0.127	0.860 - 1.36
2-methylphenanthrene	µg/kg	3.88	0.892	23.0	8	4.05	0.517	0.394	3.15 - 4.61
1-methylpyrene	µg/kg	-	-	-	5	1.11	0.3	-	- - -
Perylene	µg/kg	1.23	0.278	22.6	11	1.19	0.160	0.105	1.05 - 1.41
Triphenylene	µg/kg	1.56	0.336	21.6	6	1.59	0.189	0.172	1.22 - 1.89
Acenaphthene	µg/kg	1.69	0.798	47.2	31	1.70	0.481	0.179	1.40 - 1.98
1-methylnaphtalene	µg/kg	1.74	0.720	41.4	10	1.76	0.588	0.285	1.23 - 2.25
2-methylnaphtalene	µg/kg	1.45	0.764	52.7	12	1.52	0.480	0.276	0.970 - 1.93
C1-phenanthren.+ anthracen.	µg/kg	12.3	2.76	22.5	7	11.9	1.51	1.30	9.82 - 14.7
C2-phenanthren.+ anthracen.	µg/kg	11.8	6.03	51.1	7	11.3	3.33	2.85	6.41 - 17.2
C3-phenanthren.+ anthracen.	µg/kg	-	-	-	5	10.7	8.5	-	- - -
C1-pyrenes+fluoranthenes	µg/kg	-	-	-	5	11.0	2.1	-	- - -
C1-chrysenes	µg/kg	-	-	-	5	2.57	0.2	-	- - -
Benzofluoranthenes (a+b+j+k)	µg/kg	-	-	-	5	7.10	0.5	-	- - -
1-methylphenanthrene	µg/kg	-	-	-	5	2.35	0.3	-	- - -

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Extractable-Lipid	%	-	-	-	4	3.15	0.8	-	- - -

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Tributyltin (TBT)	µg Sn/kg	6.80	1.372	20.2	6	6.97	0.855	0.700	5.43	-	8.17
Dibutyltin (DBT)	µg Sn/kg	4.79	1.148	24.0	6	4.69	0.685	0.586	3.64	-	5.93
Monobutyltin (MBT)	µg Sn/kg	-	-	-	5	5.62	1.7	-	-	-	-