QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Biota

REFERENCE MATERIAL

Biota sample 369

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis Biota 369

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 369 of Mussel spiked from Yerseke, the Netherlands 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
2022.1	BT10	QPF027BT
2024.1	BT4	QPH113BT
2021.1	BT4	QPH102BT
2024.1	BT8	QSP089BT
2021.1	BT8	QSP077BT

Consensus Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Indeno[1,2,3-cd]pyrene	µg/kg	2.66	0.566	21.3	29	2.72	0.316	0.131	4.94
Phenanthrene	µg/kg	13.9	3.27	23.5	34	14.0	1.90	0.700	5.04
Pyrene	µg/kg	7.54	1.19	15.8	34	7.59	0.610	0.255	3.38
Benzo[g,h,i]perylene	µg/kg	1.06	0.288	27.2	30	1.13	0.199	0.066	6.21
Fluoranthene	µg/kg	11.1	2.11	19.0	35	11.4	1.20	0.447	4.01
Benzo[a]anthracene	µg/kg	2.83	0.558	19.7	32	2.86	0.310	0.123	4.36
Benzo[b]fluoranthene	µg/kg	1.36	0.324	23.7	27	1.43	0.235	0.078	5.71
Benzo[a]pyrene	µg/kg	0.929	0.259	27.8	33	0.977	0.151	0.056	6.06
Dibenz[ah]anthracene	µg/kg	1.34	0.178	13.3	23	1.35	0.110	0.046	3.46
Benzo[k]fluoranthene	µg/kg	1.78	0.336	18.9	25	1.80	0.230	0.084	4.72
Anthracene	µg/kg	2.47	0.665	26.9	32	2.48	0.445	0.147	5.95
Chrysene	µg/kg	4.42	0.762	17.2	29	4.54	0.440	0.177	4.00

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	2.65	0.196	7.4	20	2.60	0.125	0.055	2.08

Indicative Values BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Chrysene + Triphenylene	µg/kg	4.51	0.844	18.7	11	4.42	0.435	0.318	7.06
Benzo[e]pyrene	µg/kg	2.44	0.577	23.6	15	2.57	0.421	0.186	7.63
Naphthalene	µg/kg	13.5	5.48	40.5	22	14.3	2.33	1.46	10.8
Fluorene	µg/kg	2.83	0.885	31.2	22	3.03	0.560	0.236	8.32
Acenaphthylene	µg/kg	0.585	0.224	38.3	18	0.650	0.143	0.066	11.3
Dibenzothiophene	µg/kg	0.309	0.211	68.1	9	0.256	0.118	0.088	28.4
2-methylphenanthrene	µg/kg	1.27	0.550	43.3	7	1.26	0.304	0.260	20.4
1-methylpyrene	µg/kg	0.222	0.076	34.2	4	0.220	0.046	0.047	21.4
Perylene	µg/kg	0.481	0.304	63.2	7	0.569	0.221	0.143	29.8
Triphenylene	µg/kg	0.644	0.338	52.5	4	0.746	0.180	0.211	32.8
Acenaphthene	µg/kg	2.89	0.939	32.4	20	2.97	0.532	0.262	9.06
1-methylnaphtalene	µg/kg	0.811	0.289	35.6	9	0.922	0.152	0.120	14.8
2-methylnaphtalene	µg/kg	1.40	0.346	24.7	8	1.45	0.198	0.153	10.9
C1-phenanthren.+ anthracen.	µg/kg	4.46	1.92	43.1	5	4.87	0.730	1.08	24.1
C1-pyrenes+fluoranthenes	µg/kg	2.96	1.56	52.7	4	2.89	0.852	0.975	32.9
1-methylphenanthrene	µg/kg	0.912	0.041	4.5	4	0.900	0.022	0.026	2.84

Indicative Values BT8

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Tributyltin (TBT)	µg Sn/kg	9.88	2.79	28.3	19	9.90	1.48	0.801	8.11
Dibutyltin (DBT)	µg Sn/kg	3.27	0.734	22.4	15	3.20	0.446	0.237	7.24
Monobutyltin (MBT)	µg Sn/kg	7.13	3.65	51.2	14	7.58	2.75	1.22	17.1

Consensus Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PFNA	µg/kg	1.61	0.052	3.3	8	1.60	0.021	0.023	1.44
PFDA	µg/kg	3.19	0.194	6.1	8	3.12	0.089	0.086	2.68

Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	1.61	0.202	12.5	5	1.66	0.118	0.113	6.99
PFBA	µg/kg	0.990	0.114	11.5	4	1.02	0.061	0.071	7.16
PFPeA	µg/kg	0.326	0.008	2.4	4	0.326	0.004	0.005	1.48
PFHxA	µg/kg	0.536	0.040	7.5	6	0.535	0.015	0.021	3.85
PFHpA	µg/kg	0.427	0.060	13.9	4	0.426	0.027	0.037	8.71
PFOA	µg/kg	0.819	0.099	12.1	7	0.817	0.056	0.047	5.72
PFUnDA	µg/kg	2.48	0.450	18.1	8	2.51	0.253	0.199	8.02
PFDoA	µg/kg	1.53	0.164	10.7	6	1.52	0.092	0.084	5.46
PFTrDA	µg/kg	1.20	0.909	76.0	8	0.980	0.373	0.402	33.6
n-PFBS	µg/kg	1.33	0.298	22.4	7	1.34	0.194	0.141	10.6
n-PFHxS	µg/kg	1.88	0.157	8.4	7	1.90	0.089	0.074	3.96
total-PFOS	µg/kg	2.63	0.305	11.6	7	2.66	0.134	0.144	5.47