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 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 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
2021.1	BT4	QPH102BT
2021.1	BT8	QSP077BT

Consensus Values   BT4

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Acenaphthylene	µg/kg	0.654	0.1011	15.5	10	0.674	0.0720	0.0400	0.583	-	0.726
Anthracene	µg/kg	2.54	0.544	21.4	19	2.45	0.349	0.156	2.28	-	2.80
Benzo[a]anthracene	µg/kg	2.92	0.540	18.5	18	2.95	0.360	0.159	2.65	-	3.18
Benzo[k]fluoranthene	µg/kg	1.83	0.207	11.3	14	1.84	0.134	0.069	1.71	-	1.95
Chrysene	µg/kg	4.37	0.673	15.4	17	4.38	0.460	0.204	4.03	-	4.72
Dibenz[ah]anthracene	µg/kg	1.38	0.146	10.6	12	1.38	0.100	0.053	1.28	-	1.47
Fluoranthene	µg/kg	11.4	1.66	14.5	21	11.6	1.05	0.45	10.7	-	12.2
Phenanthrene	µg/kg	14.0	2.78	19.9	21	14.1	1.91	0.76	12.7	-	15.2
Pyrene	µg/kg	7.77	0.779	10.0	21	7.63	0.530	0.212	7.41	-	8.12

Method: Lipids - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Total-Lipid	%	2.66	0.198	7.4	12	2.65	0.135	0.071	2.54	-	2.78

Method: Polycyclic aromatic hydrocarbons - BT4

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Acenaphthene	µg/kg	2.79	1.072	38.5	12	3.27	0.755	0.387	2.11	-	3.46
Benzo[a]pyrene	µg/kg	0.961	0.2721	28.3	20	1.007	0.1920	0.0760	0.834	-	1.09
Benzo[b]fluoranthene	µg/kg	1.39	0.320	23.0	15	1.43	0.230	0.103	1.22	-	1.57
Benzo[e]pyrene	µg/kg	2.46	0.680	27.7	9	2.60	0.500	0.283	1.95	-	2.97
Benzo[g,h,i]perylene	µg/kg	1.06	0.299	28.3	17	1.16	0.217	0.091	0.905	-	1.21
Chrysene + Triphenylene	µg/kg	4.64	0.833	17.9	6	4.57	0.571	0.425	3.81	-	5.48
Fluorene	µg/kg	2.86	1.058	37.0	14	3.09	0.752	0.353	2.25	-	3.46
Indeno[1,2,3-cd]pyrene	µg/kg	2.70	0.549	20.4	16	2.74	0.365	0.172	2.41	-	2.99
Naphthalene	µg/kg	14.2	6.72	47.5	14	16.1	4.68	2.24	10.3	-	18.0
Perylene	µg/kg	0.475	0.2639	55.6	4	0.666	0.2026	0.1650	0.108	-	0.841
1-methylnaphtalene	µg/kg	0.914	0.4979	54.5	5	0.960	0.3600	0.2783	0.342	-	1.49
2-methylnaphtalene	µg/kg	1.29	0.276	21.3	4	1.40	0.204	0.172	0.909	-	1.67

Method: Organometals - BT8

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Dibutyltin (DBT)	µg Sn/kg	3.38	0.836	24.7	9	3.32	0.573	0.348	2.75	-	4.01
Monobutyltin (MBT)	µg Sn/kg	7.08	4.367	61.7	9	7.86	2.951	1.820	3.78	-	10.4
Tributyltin (TBT)	µg Sn/kg	10.1	2.82	27.9	11	10.3	1.90	1.06	8.23	-	12.0

Indicative Values   BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
n-PFOS	µg/kg	1.60	0.160	10.0	5	1.66	0.118	0.089	1.42	-	1.79
total-PFOS	µg/kg	2.63	0.182	6.9	7	2.66	0.134	0.086	2.46	-	2.79
PFBA	µg/kg	0.988	0.0791	8.0	4	1.018	0.0605	0.0494	0.878	-	1.10
PFPeA	µg/kg	0.327	0.0048	1.5	4	0.326	0.0035	0.0030	0.320	-	0.334
PFHxA	µg/kg	0.536	0.0232	4.3	6	0.535	0.0150	0.0118	0.513	-	0.559
PFHpA	µg/kg	0.415	0.0386	9.3	4	0.426	0.0270	0.0241	0.362	-	0.469
PFOA	µg/kg	0.817	0.0841	10.3	7	0.817	0.0560	0.0397	0.742	-	0.892
PFNA	µg/kg	1.60	0.025	1.6	8	1.60	0.021	0.011	1.58	-	1.63
PFDA	µg/kg	3.17	0.135	4.3	8	3.12	0.089	0.060	3.06	-	3.29
PFUnDA	µg/kg	2.49	0.393	15.8	8	2.51	0.253	0.174	2.17	-	2.81
PFDoA	µg/kg	1.53	0.136	8.9	6	1.52	0.092	0.069	1.39	-	1.66
PFTrDA	µg/kg	0.895	0.6314	70.6	8	0.980	0.3725	0.2790	0.380	-	1.41
L-PFBS	µg/kg	1.33	0.282	21.2	7	1.34	0.194	0.133	1.07	-	1.58
L-PFHxS	µg/kg	1.88	0.137	7.3	7	1.90	0.089	0.065	1.76	-	2.01