



WEPAL-QUASIMEME

Certificate of Analysis



Biota

REFERENCE MATERIAL

Biota sample 383

2026-Aug-11



Certificate of Analysis Biota 383

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 measurand, 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.

Please note: Most WEPAL-QUASIMEME reference materials are found to be stable over the long term (>10 years) for most measurand/matrix combinations. There are a few exceptions known to us as being less stable over the long term. These are organotins in sediment (MS6), ASP in shellfish (BT7), some PAHs and PCBs in sediment (SETOC) and N-NH₄ (as N) & N-NO₃ (as N) in clay soils (ISE).

The results of each measurand 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 383 of Ray Liver from North Sea and English channel is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the rounds given in the following table.

Year.Round	Program	Sample Round Id
2026.1	BT1	QTM152BT
2026.1	BT10	QPF043BT
2026.1	BT9	QBC088BT



Consensus Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Mercury	µg/kg	33.6	5.79	17.2	21	34.0	4.00	1.58	4.70
Copper	µg/kg	6514	299	4.6	22	6542	173	79.8	1.22
Cadmium	µg/kg	63.7	3.86	6.1	21	63.1	2.43	1.05	1.65
Lead	µg/kg	11.1	1.80	16.3	15	11.3	0.970	0.581	5.25
Cobalt	µg/kg	31.2	1.40	4.5	12	31.5	0.945	0.506	1.62
Iron	mg/kg	52.8	5.64	10.7	13	52.1	3.12	1.96	3.71
Manganese	µg/kg	917	75.0	8.2	16	915	48.1	23.4	2.56
Selenium	µg/kg	1677	186	11.1	19	1670	124	53.3	3.18
Arsenic	mg/kg	8.55	0.829	9.7	21	8.57	0.492	0.226	2.65
Nickel	µg/kg	29.1	4.25	14.6	10	29.0	2.05	1.68	5.78
Zinc	mg/kg	12.3	0.608	5.0	20	12.2	0.283	0.170	1.38
Silver	µg/kg	519	22.0	4.2	11	523	9.38	8.29	1.60
Vanadium	µg/kg	14.9	1.44	9.6	9	15.1	0.880	0.599	4.02

Method: Weight - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Dry-weight	%	56.3	0.397	0.7	13	56.5	0.250	0.138	0.244



Indicative Values BT1

Method: Metals - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Aluminium	mg/kg	0.683	0.103	15.1	7	0.700	0.060	0.049	7.11
Chromium	µg/kg	112	33.6	30.0	19	113	18.6	9.64	8.61
Tin	µg/kg	60.7	25.7	42.3	4	67.1	11.2	16.1	26.5
Sodium	mg/kg	1287	36.6	2.8	4	1287	16.5	22.9	1.78
Magnesium	mg/kg	109	8.41	7.7	6	110	5.00	4.29	3.94
Phosphorus	mg/kg	1484	148	10.0	4	1488	72.0	92.4	6.23
Potassium	mg/kg	1771	77.0	4.3	4	1763	39.0	48.1	2.72
Calcium	mg/kg	113	4.03	3.6	4	113	2.50	2.52	2.23
Molybdene	µg/kg	130	3.24	2.5	5	130	1.70	1.81	1.39
Barium	µg/kg	20.0	10.0	50.2	4	23.1	5.30	6.26	31.4

Method: Lipids - BT1

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Total-Lipid	%	42.0	1.15	2.8	4	42.0	0.550	0.721	1.72



Consensus Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE47	µg/kg	3.10	0.384	12.4	10	2.98	0.253	0.152	4.90
BDE100	µg/kg	1.16	0.164	14.1	9	1.14	0.090	0.068	5.89



Indicative Values BT9

Method: Brominated Flame Retardants - BT9

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
BDE28	µg/kg	0.182	0.034	18.7	8	0.183	0.016	0.015	8.27
BDE154	µg/kg	0.328	0.101	30.8	8	0.354	0.071	0.045	13.6
Total lipid	(%)	41.1	6.41	15.6	6	41.4	3.15	3.27	7.97



Consensus Values BT10

Method: Perfluorinated alkyl substances - BT10									
Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
PFDA	µg/kg	1.03	0.139	13.6	14	1.05	0.093	0.047	4.53



Indicative Values BT10

Method: Perfluorinated alkyl substances - BT10

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
n-PFOS	µg/kg	13.8	2.73	19.7	13	14.5	1.53	0.945	6.84
PFOSA	µg/kg	0.520	0.033	6.3	4	0.521	0.020	0.020	3.91
PFOA	µg/kg	1.23	0.342	27.8	13	1.29	0.165	0.118	9.65
PFNA	µg/kg	1.62	0.369	22.7	15	1.66	0.194	0.119	7.33
PFUnDA	µg/kg	0.597	0.129	21.6	12	0.609	0.085	0.047	7.80
PFDoA	µg/kg	0.231	0.054	23.2	8	0.237	0.038	0.024	10.3
PFTeDA	µg/kg	0.140	0.067	47.4	6	0.167	0.031	0.034	24.2
n-PFHxS	µg/kg	0.138	0.037	26.6	9	0.145	0.017	0.015	11.1
total-PFOS	µg/kg	13.9	2.80	20.2	13	14.5	1.59	0.970	6.99