



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Metals in seawater

REFERENCE MATERIAL

AQ3 sample 175



Certificate of Analysis AQ3 175

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.

Sample information

QUASIMEME reference materials cover a range of natural SeaWater species from contaminated waters from the North Sea and/or Mediterranean.

This AQ3 sample 175 of Low salinity seawater spiked with metals from North Sea (diluted) 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
2022.2	AQ3	QTM337SW



Consensus Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Arsenic	µg/l	3.96	0.338	8.5	18	3.98	0.213	0.099	3.79	-	4.13
Cadmium	µg/l	0.549	0.0431	7.9	22	0.553	0.0305	0.0115	0.530	-	0.568
Chromium	µg/l	3.00	0.146	4.9	18	3.00	0.100	0.043	2.92	-	3.07
Cobalt	µg/l	2.50	0.164	6.6	13	2.50	0.120	0.057	2.40	-	2.60
Copper	µg/l	5.44	0.450	8.3	22	5.39	0.311	0.120	5.24	-	5.64
Lead	µg/l	3.65	0.403	11.0	24	3.69	0.278	0.103	3.48	-	3.82
Manganese	µg/l	6.98	0.685	9.8	14	7.13	0.495	0.229	6.58	-	7.37
Nickel	µg/l	13.9	1.23	8.9	21	14.0	0.89	0.34	13.4	-	14.5
Vanadium	µg/l	5.59	0.405	7.2	12	5.60	0.284	0.146	5.34	-	5.85
Zinc	µg/l	6.92	0.935	13.5	19	6.83	0.633	0.268	6.47	-	7.37



Indicative Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Boron	µg/l	2040	111	5.4	8	2060	72	49	1952	-	2133
Iron	µg/l	14.1	5.09	36.0	12	15.5	3.32	1.84	10.9	-	17.3
Magnesium	mg/l	528	35.0	6.6	8	530	24.5	15.5	499	-	556
Silver	µg/l	1.56	0.313	20.1	8	1.58	0.230	0.138	1.30	-	1.81
Strontium	mg/l	3.22	0.458	14.2	8	3.22	0.300	0.203	2.85	-	3.59
Thallium	µg/l	0.589	0.2377	40.4	4	0.575	0.1601	0.1486	0.259	-	0.919
Tin	µg/l	3.37	0.605	18.0	6	3.33	0.410	0.309	2.76	-	3.97
Uranium	µg/l	1.37	0.220	16.0	4	1.37	0.145	0.138	1.07	-	1.68