QUASIMEME

Quality assurance of information for marine environmental monitoring

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Certificate of Analysis

Metals in seawater

REFERENCE MATERIAL

AQ3 sample 192

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis AQ3 192

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.

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 192 of Low salinity seawater spiked with metals (high) from North Sea (diluted), 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
2024.2	AQ3	QTM370SW

Consensus Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Copper	µg/l	240	21.1	8.8	20	240	14.2	5.89	2.45
Cadmium	µg/l	7.09	0.725	10.2	17	7.20	0.440	0.220	3.10
Lead	µg/l	772	60.2	7.8	17	787	39.5	18.2	2.36
Cobalt	µg/l	49.4	2.06	4.2	12	49.3	1.60	0.743	1.51
Iron	µg/l	199	22.9	11.5	14	199	20.2	7.66	3.84
Manganese	µg/l	234	21.7	9.3	13	234	14.0	7.54	3.22
Arsenic	µg/l	198	16.0	8.1	16	200	8.00	5.01	2.53
Chromium	µg/l	156	8.81	5.7	17	156	6.00	2.67	1.72
Nickel	µg/l	661	40.3	6.1	18	665	26.1	11.9	1.80
Zinc	µg/l	553	38.4	6.9	18	555	25.0	11.3	2.05
Silver	µg/l	39.3	2.34	6.0	12	39.1	1.28	0.845	2.15
Boron	µg/l	1303	214	16.4	11	1349	149	80.6	6.19
Vanadium	µg/l	296	19.7	6.7	14	295	9.39	6.59	2.23
Tin	µg/l	137	21.6	15.8	11	141	8.80	8.15	5.95
Thallium	µg/l	78.1	7.93	10.2	8	78.0	2.85	3.51	4.49
Uranium	µg/l	16.9	0.911	5.4	9	17.0	0.400	0.380	2.24
Magnesium	mg/l	354	11.1	3.1	11	355	6.00	4.17	1.18
Strontium	mg/l	2.16	0.233	10.8	13	2.27	0.226	0.081	3.74