QUASIMEME

Quality assurance of information for marine environmental monitoring

Certificate of Analysis

Metals in seawater

REFERENCE MATERIAL

AQ3 sample 163

WAGENINGEN
UNIVERSITY & RESEARCH

Certificate of Analysis AQ3 163

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.

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 163 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
2021.1	AQ3	QTM313SW

Consensus Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Arsenic	µg/l	7.03	0.568	8.1	20	7.11	0.378	0.159	6.76 - 7.29
Cadmium	µg/l	0.816	0.0807	9.9	20	0.823	0.0570	0.0226	0.778 - 0.854
Chromium	µg/l	2.76	0.363	13.2	19	2.70	0.252	0.104	2.58 - 2.93
Cobalt	µg/l	1.08	0.157	14.5	16	1.10	0.112	0.049	1.00 - 1.17
Copper	µg/l	9.01	0.971	10.8	21	9.15	0.700	0.265	8.57 - 9.45
Lead	µg/l	1.90	0.123	6.5	19	1.88	0.080	0.035	1.84 - 1.96
Manganese	µg/l	3.38	0.169	5.0	16	3.38	0.110	0.053	3.29 - 3.47
Nickel	µg/l	1.91	0.391	20.5	19	1.98	0.285	0.112	1.72 - 2.10
Silver	µg/l	0.851	0.0583	6.9	10	0.862	0.0425	0.0231	0.810 - 0.892
Vanadium	µg/l	6.81	0.968	14.2	18	6.88	0.679	0.285	6.33 - 7.29
Zinc	µg/l	23.3	2.68	11.5	20	23.0	1.85	0.75	22.1 - 24.6

Indicative Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits
Boron	µg/l	1960	96	4.9	9	1930	70	40	1889 - 2034
Iron	µg/l	7.67	2.483	32.4	12	8.08	1.721	0.896	6.11 - 9.23
Tin	µg/l	3.71	0.475	12.8	6	3.68	0.342	0.242	3.24 - 4.19