



# QUASIMEME

Quality assurance of information  
for marine environmental monitoring

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## Certificate of Analysis



Metals in seawater

REFERENCE MATERIAL

AQ3 sample 154

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## Certificate of Analysis    AQ3 154

### 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 154 of Seawater spiked with metals from North Sea (Neeltje Jans) 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
2020.1	AQ3	QTM296SW



### Consensus Values AQ3

#### Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Arsenic	µg/l	2.78	0.356	12.8	14	2.87	0.251	0.119	2.57	-	2.98
Cadmium	µg/l	0.110	0.0186	16.9	12	0.114	0.0133	0.0067	0.0987	-	0.122
Copper	µg/l	3.56	0.214	6.0	13	3.51	0.151	0.074	3.43	-	3.69
Nickel	µg/l	0.979	0.1404	14.3	11	1.000	0.1000	0.0529	0.886	-	1.07
Vanadium	µg/l	2.05	0.200	9.8	12	2.04	0.142	0.072	1.92	-	2.17
Zinc	µg/l	5.62	0.910	16.2	12	5.69	0.595	0.328	5.05	-	6.19



### Indicative Values AQ3

#### Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Boron	µg/l	4230	175	4.1	6	4200	120	89	4053	-	4402
Chromium	µg/l	0.981	0.2728	27.8	10	0.911	0.1765	0.1078	0.789	-	1.17
Cobalt	µg/l	0.187	0.0103	5.5	9	0.186	0.0070	0.0043	0.179	-	0.195
Lead	µg/l	0.577	0.1223	21.2	13	0.580	0.0806	0.0424	0.504	-	0.650
Manganese	µg/l	2.45	0.441	18.0	12	2.39	0.323	0.159	2.17	-	2.73
Silver	µg/l	0.196	0.0218	11.1	6	0.197	0.0150	0.0111	0.174	-	0.218