



QUASIMEME

Quality assurance of information
for marine environmental monitoring

Certificate of Analysis



Metals in seawater

REFERENCE MATERIAL

AQ3 sample 181



Certificate of Analysis AQ3 181

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 181 of Seawater unspiked from North Sea 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
2023.2	AQ3	QTM351SW



Consensus Values AQ3

Method: Metals - AQ3

Element

Copper

Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
µg/l	3.52	0.356	10.1	15	3.56	0.240	0.115	3.32	-	3.71



Indicative Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	95 % confidence limits		
Cadmium	µg/l	0.0248	0.0191	77.1	10	0.0255	0.0130	0.0076	0.0113	-	0.0383
Cobalt	µg/l	-	-	-	4	0.100	0.1	-	-	-	-
Iron	µg/l	-	-	-	5	2.35	1.9	-	-	-	-
Manganese	µg/l	0.432	0.1895	43.9	7	0.425	0.1050	0.0895	0.263	-	0.601
Arsenic	µg/l	2.34	0.650	27.8	11	2.34	0.480	0.245	1.91	-	2.77
Chromium	µg/l	-	-	-	5	0.425	0.2	-	-	-	-
Nickel	µg/l	0.634	0.2241	35.3	11	0.690	0.2060	0.0845	0.486	-	0.783
Zinc	µg/l	7.11	1.502	21.1	12	7.14	1.000	0.542	6.17	-	8.06
Boron	µg/l	4300	205.7	4.8	6	4309	122.0	105.0	4094	-	4505
Vanadium	µg/l	1.61	0.308	19.1	10	1.67	0.192	0.122	1.40	-	1.83
Uranium	µg/l	-	-	-	5	2.77	0.1	-	-	-	-
Magnesium	mg/l	1201	70.9	5.9	7	1206	44.1	33.5	1137	-	1264
Strontium	mg/l	7.22	0.373	5.2	7	7.32	0.272	0.176	6.88	-	7.55