



WEPAL-QUASIMEME

Certificate of Analysis



Metals in seawater

REFERENCE MATERIAL

AQ3 sample 203

2026-Aug-11



Certificate of Analysis AQ3 203

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 measurand, 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.

Please note: Most WEPAL-QUASIMEME reference materials are found to be stable over the long term (>10 years) for most measurand/matrix combinations. There are a few exceptions known to us as being less stable over the long term. These are organotins in sediment (MS6), ASP in shellfish (BT7), some PAHs and PCBs in sediment (SETOC) and N-NH₄ (as N) & N-NO₃ (as N) in clay soils (ISE).

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 203 of low salinity seawater spiked with metals from North Sea, the Netherlands is prepared for the QUASIMEME proficiency programs. The results on which the values in this report are based were taken from the rounds given in the following table.

Year.Round	Program	Sample Round Id
2026.1	AQ3	QTM393SW



Consensus Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Copper	µg/l	10.7	1.11	10.4	18	10.9	0.735	0.327	3.06
Cadmium	µg/l	6.23	0.483	7.8	17	6.30	0.300	0.147	2.35
Lead	µg/l	8.48	0.508	6.0	17	8.43	0.230	0.154	1.81
Cobalt	µg/l	2.88	0.247	8.6	11	2.94	0.135	0.093	3.23
Manganese	µg/l	8.00	0.896	11.2	12	7.88	0.525	0.323	4.04
Arsenic	µg/l	9.65	1.06	11.0	15	9.68	0.820	0.343	3.56
Chromium	µg/l	9.04	0.821	9.1	14	9.01	0.517	0.274	3.03
Nickel	µg/l	28.8	2.39	8.3	17	28.6	1.46	0.725	2.52
Zinc	µg/l	22.1	2.92	13.2	17	22.5	1.46	0.886	4.01
Boron	µg/l	3499	148	4.2	8	3538	104	65.4	1.87
Vanadium	µg/l	13.3	1.10	8.3	9	13.4	0.600	0.458	3.44
Tin	µg/l	4.25	0.383	9.0	8	4.25	0.260	0.169	3.99
Magnesium	mg/l	510	38.3	7.5	8	505	17.5	16.9	3.32
Strontium	mg/l	5.25	0.242	4.6	9	5.21	0.150	0.101	1.92



Indicative Values AQ3

Method: Metals - AQ3

Element	Unit	Mean	Std.Dev.	CV %	N	Median	MAD	Uncertainty	Rel.Uncert. %
Iron	µg/l	50.3	13.4	26.6	7	53.9	3.90	6.33	12.6
Silver	µg/l	0.719	0.028	3.9	7	0.717	0.016	0.013	1.86
Thallium	µg/l	1.15	0.123	10.7	4	1.13	0.059	0.077	6.72
Uranium	µg/l	1.70	0.088	5.2	7	1.70	0.056	0.041	2.44