

REEF ICP TOTAL

Methodology: ICP-OES, photometric and electrochemical methods specific for seawater. Further methods possible via upgrades.

Recommended values are optimized for coral reef aquariums.

Sample ID: 20836870

Analysis ID: 330236

Booked upgrades: non

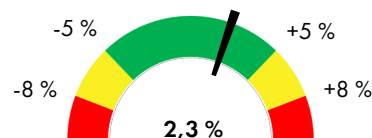
Sampling Point: Aquarium 1

Volume in Liters: 757

Sampling Date: 09-28-2026

Sample Arrival: 10-07-2026

Ion balance of the analysis



Slight cation excess / anion deficiency

Plausibility check of measured values passed

[To the dosing and action recommendations](#)



PHYSICAL-CHEMICAL BASIC VALUES

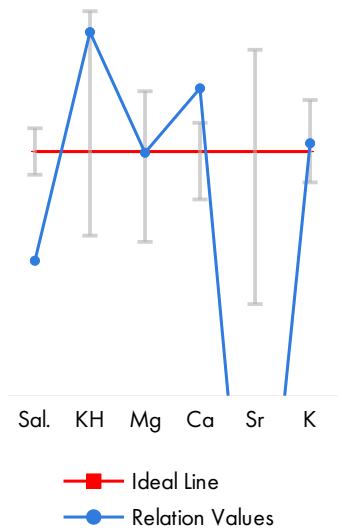
	measured	Reference Range
Electrical Conductivity (mS/cm 25°C)	46,6	51,7 - 53,0 - 54,5
Density (kg/Liter, calculated 25°C)	1,0198	1,022 - 1,023 - 1,024
Relative Density (calculated 25°C)	1,0228	1,026 - 1,027
Salinity (psu, calculated)	30,3	34 - 35 - 36
pH Value	7,94	7,9 - 8,3 - 8,4
Alkalinity (°dKH)	8,6	6,5 - 7,3 - 8,5
CO2 Content (mg/l)	1,13	0,04 - 2,5
Alkalinity pH 4.3 (mmol/L)	3,07	2,3 - 2,58 - 3,0
Smell	none	none
Color	colorless	colorless

MACROELEMENTS, CALCIUM BALANCE ELEMENTS AND HALOGENS in mg/Liter

		measured	Reference Range	rel. 35 psu
Sodium	Na	9400	9500 - 10700 - 11500	10858
Sulfur	S	877	850 - 900 - 950	1013
Sulfate	SO ₄ ²⁻	2627	2550 - 2700 - 2850	3035
Potassium	K	399	380 - 395 - 420	461
Boron	B	4,96	3,8 - 4,5 - 5,5	5,73
Magnesium	Mg	1348	1200 - 1350 - 1450	1557
Calcium	Ca	458	400 - 425 - 440	529
Strontium	Sr	2,71	6,5 - 8,0 - 9,0	3,13
Chloride	Cl ⁻	16647	18700 - 19500 - 20300	19229
Bromine (total bromine, ICP-OES)	Br	55	55 - 67 - 75	63,5
Fluoride	F ⁻	0,34	0,9 - 1,3 - 1,6	0,39
Iodine (Total Iodine, ICP-OES)	I	0,016	0,055 - 0,065 - 0,080	0,019

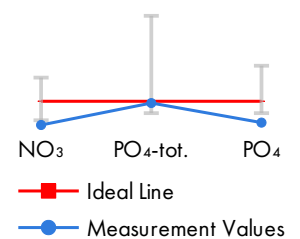
RELATION VALUES OF MACROELEMENTS AND HALOGENS

		measured	Reference Range
Salinity Meas. : Target Value	Sal.	0,87	0,97 - 1,00 - 1,03
KH Measurement : Target Value	KH	1,19	0,90 - 1,00 - 1,17
Magnesium : Salinity	Mg	44,5	33,3 - 38,6 - 42,6
Calcium : Salinity	Ca	15,1	11,1 - 12,1 - 12,9
Strontium: Salinity	Sr	0,09	0,18 - 0,23 - 0,26
Potassium : Salinity	K	13,2	10,6 - 11,3 - 12,4
Boron : Salinity	B	0,16	0,11 - 0,13 - 0,16
Chloride : Salinity	Cl ⁻	549	519 - 557 - 597
Sulfate : Salinity	SO ₄ ²⁻	86,7	71 - 77 - 84
Chloride : Sulfate	Cl ⁻ /SO ₄ ²⁻	6,34	6,6 - 7,2 - 8,0
Magnesium : Calcium	Mg/Ca	2,94	2,7 - 3,2 - 3,6
Calcium : Strontium	Ca/Sr	169	44 - 53 - 68
Bromine : Fluoride	Br ⁻ /F ⁻	161,8	34 - 52 - 83
Fluoride : Iodine	F ⁻ /I ⁻	20,7	11 - 20 - 29
Fluoride : Sulfur : Strontium	FSS	47,7	80 - 100 - 120



MACRO NUTRIENTS in mg/Liter

		measured	Reference Range
Nitrate	NO ₃ ⁻	0	1 - 10
Nitrite	NO ₂ ⁻	n.d.	n.d. - 0,15
Phosphorus (ICP-OES)	P	0,012	0,006 - 0,060
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0,037	0,02 - 0,18
ortho-Phosphate (photometric)	PO ₄ ³⁻	0,004	0,02 - 0,10
Silicon	Si	0,36	0,1 - 0,2
Silicate (calculated)	SiO ₂	0,77	0,2 - 0,4

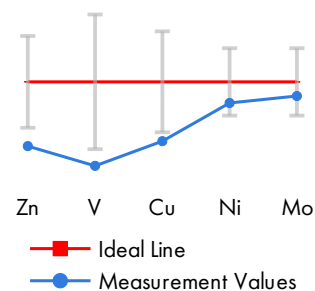


ORGANIC FACTORS

		measured	Reference Range
Nitrate : ortho-Phosphate	NO ₃ ⁻ /PO ₄ ³⁻	2,5	90 - 110
Total Phosphate : ortho-Phosphate	PO ₄ ³⁻ _{tot.} /PO ₄ ³⁻	9,25	1,00
Total Phosphate : Iodine	PO ₄ ³⁻ /I ⁻	2,28	0,13 - 1,67
SAK254 (m ⁻¹)		not measured	only with SAK254 upgrade
NPOC (mg/l)	C	not measured	only with organic upgrade
TN _b (mg/l)	N	not measured	only with organic upgrade

Dynamic Elements in µg/Liter

		measured	Reference Range
Zinc	Zn	2	3 - 5,5 - 8
Vanadium	V	1,01	2 - 6 - 10
Copper	Cu	1,65	2 - 4 - 6
Nickel	Ni	3,56	3 - 4,5 - 6
Molybdenum	Mo	12,9	10 - 15 - 20

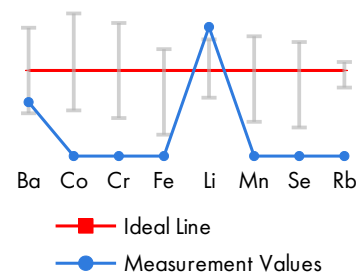


PHYSIOLOGICALLY RELEVANT TRACE ELEMENTS in µg/Liter

		measured	Reference Range
Barium	Ba	6,3	5 - max. 50
Cobalt	Co	n.d.	n.d. - max. 1,9
Chromium	Cr	n.d.	n.d. - max. 2,3
Iron	Fe	n.d.	n.d. - max. 2,5
Lithium	Li	332	180 - max. 350
Manganese	Mn	n.d.	n.d. - max. 0,25
Selenium	Se	n.d.	n.d. - max. 2,0

only with ICP-MS upgrade:

Rubidium	Rb	not measured	
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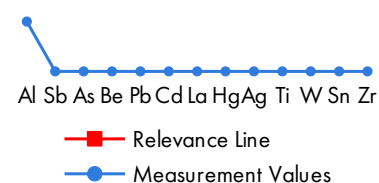
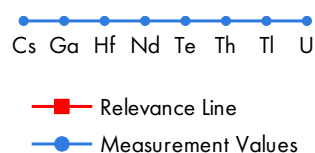


OTHER TRACE ELEMENTS AND POTENTIAL POLLUTANTS in µg/Liter

		measured	Reference Range
Aluminum	Al	5,2	5 - 30
Antimony	Sb	n.d.	n.d. - max. 10
Arsenic	As	n.d.	n.d.
Beryllium	Be	n.d.	n.d.
Lead	Pb	n.d.	n.d.
Cadmium	Cd	n.d.	n.d.
Lanthanum	La	n.d.	2 - 10
Mercury	Hg	n.d.	n.d.
Silver	Ag	n.d.	n.d. - max. 10
Titanium	Ti	n.d.	n.d. - 3,5
Tungsten	W	n.d.	n.d. - max. 30
Tin	Sn	n.d.	n.d. - max. 10
Zirconium	Zr	n.d.	n.d. - 2,2

only with ICP-MS upgrade:

Cesium	Cs	not measured	
Gallium	Ga	not measured	
Hafnium	Hf	not measured	
Neodymium	Nd	not measured	
Tellurium	Te	not measured	
Thorium	Th	not measured	
Thallium	Tl	not measured	
Uranium	U	not measured	



OSMOSIS WATER

in mg/Liter		measured	Reference Range
Boron	B	n.d.	n.d.
Calcium	Ca	n.d.	n.d.
Potassium	K	n.d.	n.d.
Magnesium	Mg	n.d.	n.d.
Sodium	Na	n.d.	n.d.
Sulfur	S	n.d.	n.d.
Bromine (total bromine, ICP-OES)	Br	n.d.	n.d.
Iodine (Total Iodine, ICP-OES)	I	n.d.	n.d.
Phosphorus (ICP-OES)	P	n.d.	n.d.
Total Phosphate (calculated)	PO ₄ ³⁻ tot.	n.d.	n.d.
Silicon	Si	n.d.	n.d.
Silicate (calculated)	SiO ₂	n.d.	n.d.
in µg/Liter			
Barium	Ba	n.d.	n.d.
Copper	Cu	n.d.	n.d.
Iron	Fe	n.d.	n.d.
Lithium	Li	n.d.	n.d.
Nickel	Ni	n.d.	n.d.
Zinc	Zn	n.d.	n.d.
Aluminum	Al	n.d.	n.d.
Antimony	Sb	n.d.	n.d.
Arsenic	As	n.d.	n.d.
Beryllium	Be	n.d.	n.d.
Lead	Pb	n.d.	n.d.
Cadmium	Cd	n.d.	n.d.
Chromium	Cr	n.d.	n.d.
Cobalt	Co	n.d.	n.d.
Lanthanum	La	n.d.	n.d.
Manganese	Mn	n.d.	n.d.
Molybdenum	Mo	n.d.	n.d.
Mercury	Hg	n.d.	n.d.
Selenium	Se	n.d.	n.d.
Silver	Ag	n.d.	n.d.
Strontium	Sr	n.d.	n.d.
Titanium	Ti	n.d.	n.d.
Thallium	Tl	n.d.	n.d.
Vanadium	V	n.d.	n.d.
Tungsten	W	n.d.	n.d.
Tin	Sn	n.d.	n.d.
Zirconium	Zr	n.d.	n.d.

Overview of dosages

Product	Total quantity	spread over ...	corresponds	Priority	Checkbox
SALINITY	raise, do not make individual doses!			highest	
ELEMENTALS S	No dosage				
ELEMENTALS K	No dosage				
ELEMENTALS B	No dosage				
ELEMENTALS MG	No dosage				
ELEMENTALS SR	200,0 ml	3 days	66,7 ml/day	1	☐ ☐ ☐
ELEMENTALS BR	75,7 ml	1 day	75,7 ml/day	2	☐
ELEMENTALS F	363,4 ml	2 days	181,7 ml/day	2	☐ ☐
TRACE I	36,8 ml	2 days	18,4 ml/day	2	☐ ☐
ELEMENTALS N	37,8 ml	3 days	12,6 ml/day	2	☐ ☐ ☐
ELEMENTALS P	27,3 ml	2 days	13,7 ml/day	2	☐ ☐
TRACE ZN	2,6 ml	2 days	1,3 ml/day	3	☐ ☐
TRACE V	7,6 ml	3 days	2,5 ml/day	3	☐ ☐ ☐
TRACE CU	17,8 ml	2 days	8,9 ml/day	3	☐ ☐
TRACE NI	No dosage				
TRACE MO	No dosage				
TRACE BA	No dosage				
TRACE CO	1,8 ml	1 day	1,8 ml/day	4	☐
TRACE CR	17,9 ml	3 days	6,0 ml/day	4	☐ ☐ ☐
TRACE FE	2,4 ml	2 days	1,2 ml/day	4	☐ ☐
TRACE LI	No dosage				
TRACE MN	0,3 ml	1 day	0,3 ml/day	4	☐
TRACE SE	48,4 ml	4 days	12,1 ml/day	4	☐ ☐ ☐ ☐
TRACE RB	only with ICP-MS upgrade				

Upgrade options for a Reef ICP Total:

ICP-MS upgrade: Analysis of all trace elements (except aluminum and lithium) using ICP-MS with up to 1000x higher sensitivity than ICP-OES and analysis of exclusive elements. ICP-MS exclusive elements cannot be determined using ICP-OES, or at least not with sufficient sensitivity. Labeling of measured values determined using ICP-MS: **MS**

Organic upgrade: Determination of the concentrations of organic carbon (NPOC) and total nitrogen (TNb).

SAK254 upgrade: Determination of the indicator value for the concentration of unsaturated organic compounds.

Detection limits

Time-averaged detection limits for all relevant values are published regularly on lab.fauamarin.de.

Abbreviations:

ICP-OES (inductively coupled plasma with optical emission spectrometry), ICP-MS (inductively coupled plasma with mass spectrometry), SAK254 (spectral absorption coefficient at 254 nm), NPOC (not easily expelled organic carbon), TNb (total bound nitrogen), n.d. (not detectable).