

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: 20829759
Analysis ID: 283102
Booked upgrades: ICP-MS, Organic, SAK254

Sampling Point: Aquarium 1
 Volume in Liters: 151
 Sampling Date: 02-23-2026
 Sample Arrival: 03-03-2026

[To the dosing and action recommendations](#)



PHYSICAL-CHEMICAL BASIC VALUES

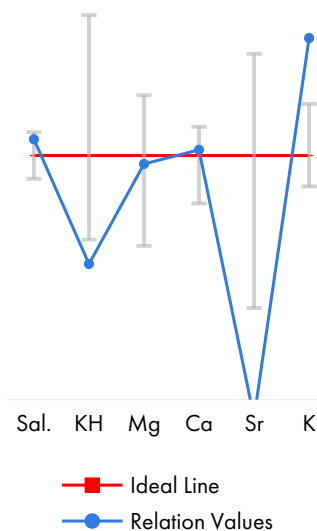
	measured	Reference Range
Electrical Conductivity (mS/cm 25°C)	54	51,7 - 53,0 - 54,5
Density (kg/Liter, calculated 25°C)	1,0238	1,022 - 1,023 - 1,024
Relative Density (calculated 25°C)	1,0269	1,026 - - - 1,027
Salinity (psu, calculated)	35,7	34 - 35 - 36
pH Value	7,7	7,9 - 8,3 - 8,4
Carbonate Hardness (°dKH)	6,5	6,5 - 7,3 - 8,5
CO2 Content (mg/l)	3,76	0,04 - - - 2,5
Alkalinity pH 4.3 (mmol/L)	2,32	2,3 - 2,58 - 3,0
Smell	none	none
Color	colorless	colorless

MACROELEMENTS, CALCIUM BALANCE ELEMENTS, AND HALOGENS in mg/Lit

		measured	Reference Range	rel. 35 psu
Sodium	Na	11779	9500 - 10700 - 11500	11562
Sulfur	S	924	850 - 900 - 950	907
Sulfate	SO ₄ ²⁻	2768	2550 - 2700 - 2850	2717
Potassium	K	452	380 - 395 - 420	444
Boron	B	5,72	3,8 - 4,5 - 5,5	5,61
Magnesium	Mg	1336	1200 - 1350 - 1450	1311
Calcium	Ca	428	400 - 425 - 440	420
Strontium	Sr	5,42	6,5 - 8,0 - 9,0	5,32
Chloride	Cl ⁻	19819	18700 - 19500 - 20300	19454
Bromine (total bromine, ICP-OES)	Br	87,3	55 - 67 - 75	85,7
Fluoride	F ⁻	0,62	0,9 - 1,3 - 1,6	0,61
Iodine (Total Iodine, ICP-OES)	I	0,054	0,055 - 0,065 - 0,080	0,053

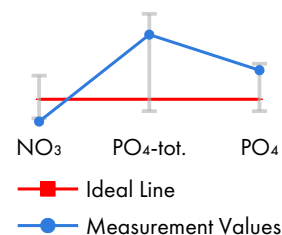
RELATION VALUES OF MACROELEMENTS AND HALOGENS

		measured	Reference Range
Salinity Meas. : Target Value	Sal.	1,02	0,97 - 1,00 - 1,03
KH Measurement : Target Value	KH	0,9	0,90 - 1,00 - 1,17
Magnesium : Salinity	Mg	37,5	33,3 - 38,6 - 42,6
Calcium : Salinity	Ca	12	11,1 - 12,1 - 12,9
Strontium: Salinity	Sr	0,15	0,18 - 0,23 - 0,26
Potassium : Salinity	K	12,7	10,6 - 11,3 - 12,4
Boron : Salinity	B	0,16	0,11 - 0,13 - 0,16
Chloride : Salinity	Cl ⁻	556	519 - 557 - 597
Sulfate : Salinity	SO ₄ ²⁻	77,6	71 - 77 - 84
Chloride : Sulfate	Cl ⁻ /SO ₄ ²⁻	7,16	6,6 - 7,2 - 8,0
Magnesium : Calcium	Mg/Ca	3,12	2,7 - 3,2 - 3,6
Calcium : Strontium	Ca/Sr	79	44 - 53 - 68
Bromine : Fluoride	Br ⁻ /F ⁻	140,8	34 - 52 - 83
Fluoride : Iodine	F ⁻ /I ⁻	11,4	11 - 20 - 29
Fluoride : Sulfur : Strontium	FSS	65,2	80 - 100 - 120



MACRO NUTRIENTS in mg/Liter

		measured	Reference Range
Nitrate	NO ₃ ⁻	0,3	1 - 10
Nitrite	NO ₂ ⁻	n.d.	n.d. - 0,15
Phosphorus (ICP-OES)	P	0,049	0,006 - 0,060
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0,149	0,02 - 0,18
ortho-Phosphate (photometric)	PO ₄ ³⁻	0,089	0,02 - 0,10
Silicon	Si	0,12	0,1 - 0,2
Silicate (calculated)	SiO ₂	0,25	0,2 - 0,4

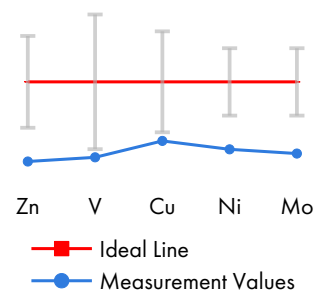


ORGANIC FACTORS

		measured	Reference Range
Nitrate : ortho-Phosphate	NO ₃ ⁻ /PO ₄ ³⁻	3,03	90 - 110
Total Phosphate : ortho-Phosphate	PO ₄ ³⁻ _{tot.} /PO ₄ ³⁻	1,674	1,00
Total Phosphate : Iodine	PO ₄ ³⁻ /I ⁻	2,73	0,13 - 1,67
SAK254 (m ⁻¹)		1,1	1 - 2
NPOC (mg/l)	C	2,33	2 - 5
TN _b (mg/l)	N	0,36	0 - 3

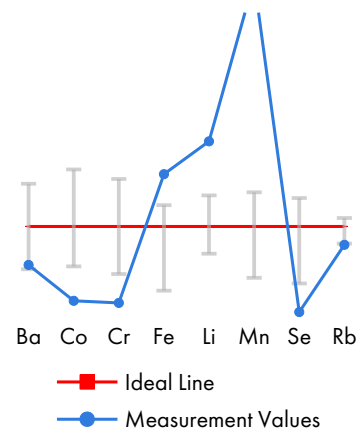
Dynamic Elements in µg/Liter

			measured	Reference Range
Zinc	Zn	MS	1,162	3 - 5,5 - 8
Vanadium	V	MS	1,517	2 - 6 - 10
Copper	Cu	MS	1,66	2 - 4 - 6
Nickel	Ni	MS	1,493	3 - 4,5 - 6
Molybdenum	Mo	MS	4,349	10 - 15 - 20



PHYSIOLOGICALLY RELEVANT TRACE ELEMENTS in µg/Liter

			measured	Reference Range
Barium	Ba	MS	5,503	5 - max. 50
Cobalt	Co	MS	0,197	n.d. - max. 1,9
Chromium	Cr	MS	0,192	n.d. - max. 2,3
Iron	Fe	MS	3,224	n.d. - max. 2,5
Lithium	Li	OES *	439	180 - max. 350
Manganese	Mn	MS	0,388	n.d. - max. 0,25
Selenium	Se	MS	n.d.	n.d. - max. 2,0

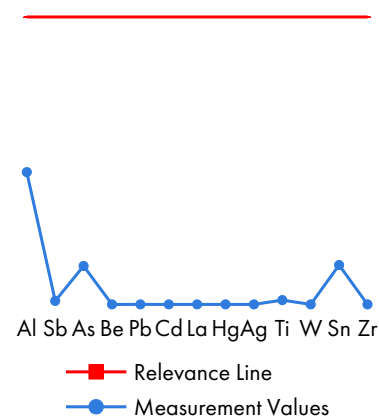


ICP-MS exclusive element:

Rubidium	Rb	MS	78,55	70 - 130
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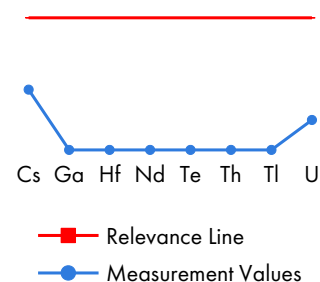
OTHER TRACE ELEMENTS AND POTENTIAL POLLUTANTS in µg/Liter

			measured	Reference Range
Aluminum	Al	OES	13,8	5 - 30
Antimony	Sb	MS	0,121	n.d. - max. 10
Arsenic	As	MS	0,668	n.d.
Beryllium	Be	MS	n.d.	n.d.
Lead	Pb	MS	n.d.	n.d.
Cadmium	Cd	MS	n.d.	n.d.
Lanthanum	La	MS	n.d.	2 - 10
Mercury	Hg	MS	n.d.	n.d.
Silver	Ag	MS	n.d.	n.d. - max. 10
Titanium	Ti	MS	0,149	n.d. - 3,5
Tungsten	W	MS	n.d.	n.d. - max. 30
Tin	Sn	MS	0,684	n.d. - max. 10
Zirconium	Zr	MS	n.d.	n.d. - 2,2



ICP-MS exclusive elements:

Cesium	Cs	MS	1,37	0,5 - 1,500
Gallium	Ga	MS	n.d.	n.d. - 0,200
Hafnium	Hf	MS	n.d.	n.d. - 0,200
Neodymium	Nd	MS	n.d.	n.d. - 0,200
Tellurium	Te	MS	n.d.	n.d. - 0,100
Thorium	Th	MS	n.d.	n.d. - 0,100
Thallium	Tl	MS	n.d.	n.d. - 0,100
Uranium	U	MS	0,453	n.d. - 0,100



OSMOSIS WATER

in mg/Liter

		measured	Reference Range
Boron	B	0,17	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	0,09	n.d.
Silicate (calculated)	SiO ₂	0,2	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	lower			highest	
ELEMENTALS S	No dosage				
ELEMENTALS K	Water change			1	
ELEMENTALS B	Water change			1	
ELEMENTALS MG	No dosage				
ELEMENTALS SR	19,0 ml	2 days	9,5 ml/day	1	☐
ELEMENTALS BR	No dosage				
ELEMENTALS F	51,3 ml	2 days	25,7 ml/day	2	☐
TRACE I	1,6 ml	1 day	1,6 ml/day	2	☐
ELEMENTALS N	No dosage				
ELEMENTALS P	No dosage				
TRACE ZN	0,7 ml	2 days	0,4 ml/day	3	☐
TRACE V	No dosage				
TRACE CU	3,5 ml	2 days	1,8 ml/day	3	☐
TRACE NI	1,1 ml	1 day	1,1 ml/day	3	☐
TRACE MO	2,7 ml	2 days	1,4 ml/day	3	☐
TRACE BA	No dosage				
TRACE CO	No dosage				
TRACE CR	No dosage				
TRACE FE	No dosage				
TRACE LI	No dosage				
TRACE MN	No dosage				
TRACE SE	9,7 ml	4 days	2,4 ml/day	4	☐
TRACE RB	No dosage				

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.faunamarin.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).

* Measured value is too far outside the calibration range and cannot be precisely determined.