

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: 20834968

Analysis ID: 301487

Booked upgrades: SAK254

Sampling Point: Innovative Marine 150 EXT

Volume in Liters: 530

Sampling Date: 05-14-2026

Sample Arrival: 05-21-2026

[To the dosing and action recommendations](#)



PHYSICAL-CHEMICAL BASIC VALUES

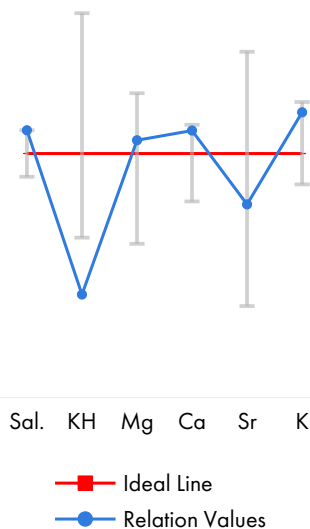
	measured	Reference Range
Electrical Conductivity (mS/cm 25°C)	54,5	51,7 - 53,0 - 54,5
Density (kg/Liter, calculated 25°C)	1,0241	1,022 - 1,023 - 1,024
Relative Density (calculated 25°C)	1,0272	1,026 - - - 1,027
Salinity (psu, calculated)	36	34 - 35 - 36
pH Value	8	7,9 - 8,3 - 8,4
Carbonate Hardness (°dKH)	6,2	6,5 - 7,3 - 8,5
CO2 Content (mg/l)	0,71	0,04 - - - 2,5
Alkalinity pH 4.3 (mmol/L)	2,21	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	11737	9500 - 10700 - 11500	11402
Sulfur	S	955	850 - 900 - 950	928
Sulfate	SO ₄ ²⁻	2861	2550 - 2700 - 2850	2780
Potassium	K	415	380 - 395 - 420	403
Boron	B	5,17	3,8 - 4,5 - 5,5	5,02
Magnesium	Mg	1372	1200 - 1350 - 1450	1333
Calcium	Ca	437	400 - 425 - 440	425
Strontium	Sr	7,5	6,5 - 8,0 - 9,0	7,29
Chloride	Cl ⁻	20084	18700 - 19500 - 20300	19510
Bromine (total bromine, ICP-OES)	Br	71,8	55 - 67 - 75	69,8
Fluoride	F ⁻	1,5	0,9 - 1,3 - 1,6	1,46
Iodine (Total Iodine, ICP-OES)	I	0,07	0,055 - 0,065 - 0,080	0,068

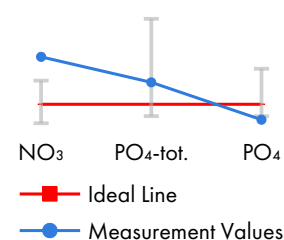
RELATION VALUES OF MACROELEMENTS AND HALOGENS

		measured	Reference Range
Salinity Meas. : Target Value	Sal.	1,03	0,97 - 1,00 - 1,03
KH Measurement : Target Value	KH	0,86	0,90 - 1,00 - 1,17
Magnesium : Salinity	Mg	38,1	33,3 - 38,6 - 42,6
Calcium : Salinity	Ca	12,1	11,1 - 12,1 - 12,9
Strontium: Salinity	Sr	0,21	0,18 - 0,23 - 0,26
Potassium : Salinity	K	11,5	10,6 - 11,3 - 12,4
Boron : Salinity	B	0,14	0,11 - 0,13 - 0,16
Chloride : Salinity	Cl ⁻	557	519 - 557 - 597
Sulfate : Salinity	SO ₄ ²⁻	79,4	71 - 77 - 84
Chloride : Sulfate	Cl ⁻ /SO ₄ ²⁻	7,02	6,6 - 7,2 - 8,0
Magnesium : Calcium	Mg/Ca	3,14	2,7 - 3,2 - 3,6
Calcium : Strontium	Ca/Sr	58,3	44 - 53 - 68
Bromine : Fluoride	Br ⁻ /F ⁻	47,9	34 - 52 - 83
Fluoride : Iodine	F ⁻ /I	21,4	11 - 20 - 29
Fluoride : Sulfur : Strontium	FSS	90,7	80 - 100 - 120



MACRO NUTRIENTS in mg/Liter

		measured	Reference Range
Nitrate	NO ₃ ⁻	15	1 - 10
Nitrite	NO ₂ ⁻	0,15	n.d. - 0,15
Phosphorus (ICP-OES)	P	0,025	0,006 - 0,060
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0,077	0,02 - 0,18
ortho-Phosphate (photometric)	PO ₄ ³⁻	0,014	0,02 - 0,10
Silicon	Si	0,25	0,1 - 0,2
Silicate (calculated)	SiO ₂	0,55	0,2 - 0,4

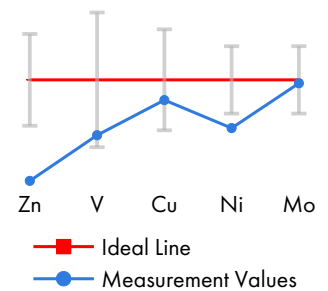


ORGANIC FACTORS

		measured	Reference Range
Nitrate : ortho-Phosphate	NO ₃ ⁻ /PO ₄ ³⁻	1075	90 - 110
Total Phosphate : ortho-Phosphate	PO ₄ ³⁻ _{tot.} /PO ₄ ³⁻	5,5	1,00
Total Phosphate : Iodine	PO ₄ ³⁻ /I	1,09	0,13 - 1,67
SAK254 (m ⁻¹)		1,1	1 - 2
NPOC (mg/l)	C	not measured	only with organic upgrade
TN _b (mg/l)	N	not measured	only with organic upgrade

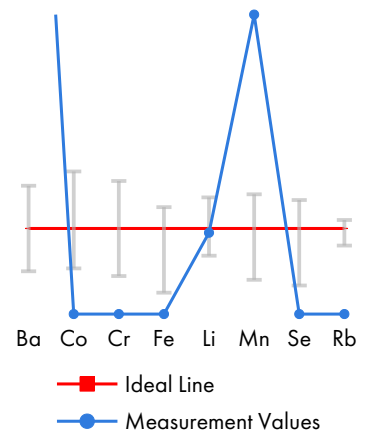
Dynamic Elements in µg/Liter

		measured	Reference Range
Zinc	Zn	n.d.	3 - 5,5 - 8
Vanadium	V	2,71	2 - 6 - 10
Copper	Cu	3,2	2 - 4 - 6
Nickel	Ni	2,35	3 - 4,5 - 6
Molybdenum	Mo	14,5	10 - 15 - 20



PHYSIOLOGICALLY RELEVANT TRACE ELEMENTS in µg/Liter

		measured	Reference Range
Barium	Ba	87,4	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	209	180 - max. 350
Manganese	Mn	0,35	n.d. - max. 0,25
Selenium	Se	n.d.	n.d. - max. 2,0

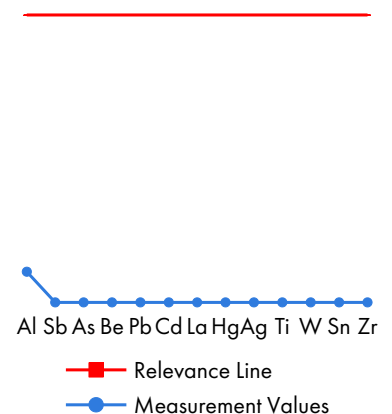


only with ICP-MS upgrade:

Rubidium	Rb	not measured	
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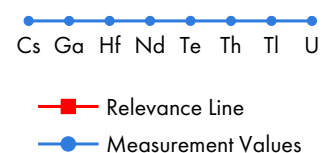
OTHER TRACE ELEMENTS AND POTENTIAL POLLUTANTS in µg/Liter

		measured	Reference Range
Aluminum	Al	3,2	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.
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Bromine (total bromine, ICP-OES)	Br	n.d.	n.d.
Iodine (Total Iodine, ICP-OES)	I	n.d.	n.d.
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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.
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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.
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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	Water change			1	
ELEMENTALS K	No dosage				
ELEMENTALS B	No dosage				
ELEMENTALS MG	No dosage				
ELEMENTALS SR	No dosage				
ELEMENTALS BR	No dosage				
ELEMENTALS F	No dosage				
TRACE I	No dosage				
ELEMENTALS N	No dosage				
ELEMENTALS P	13,8 ml	2 days	6,9 ml/day	2	<input type="checkbox"/>
TRACE ZN	2,9 ml	2 days	1,5 ml/day	3	<input type="checkbox"/>
TRACE V	No dosage				
TRACE CU	No dosage				
TRACE NI	2,8 ml	1 day	2,8 ml/day	3	<input type="checkbox"/>
TRACE MO	No dosage				
TRACE BA	No dosage				
TRACE CO	1,3 ml	1 day	1,3 ml/day	4	<input type="checkbox"/>
TRACE CR	12,5 ml	3 days	4,2 ml/day	4	<input type="checkbox"/>
TRACE FE	2,0 ml	2 days	1,0 ml/day	4	<input type="checkbox"/>
TRACE LI	No dosage				
TRACE MN	No dosage				
TRACE SE	33,9 ml	4 days	8,5 ml/day	4	<input type="checkbox"/>
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).