

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: 20636890

Analysis ID: 265000

Booked upgrades: ICP-MS

Sampling Point: NeptunianCube Peninsula Marine

Volume in Liters: 586

Sampling Date: 12-08-2025

Sample Arrival: 12-12-2025

[To the dosing and action recommendations](#)



PHYSICAL-CHEMICAL BASIC VALUES

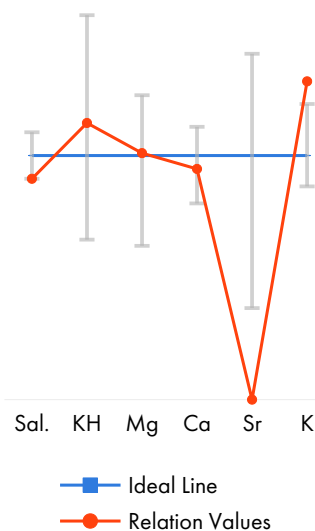
	measured	Reference Range
Electrical Conductivity (mS/cm 25°C)	51,8	51,7 - 53,0 - 54,5
Density (kg/Liter, calculated 25°C)	1,0226	1,022 - 1,023 - 1,024
Relative Density (calculated 25°C)	1,0256	1,026 - - - 1,027
Salinity (psu, calculated)	34	34 - 35 - 36
pH Value	8,02	7,9 - 8,3 - 8,4
Carbonate Hardness (°dKH)	7,8	6,5 - 7,3 - 8,5
CO2 Content (mg/l)	2,16	0,04 - - - 2,5
Alkalinity pH 4.3 (mmol/L)	2,78	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	10858	9500 - 10700 - 11500	11166
Sulfur	S	887	850 - 900 - 950	912
Sulfate	SO ₄ ²⁻	2657	2550 - 2700 - 2850	2733
Potassium	K	431	380 - 395 - 420	443
Boron	B	4,78	3,8 - 4,5 - 5,5	4,92
Magnesium	Mg	1354	1200 - 1350 - 1450	1392
Calcium	Ca	418	400 - 425 - 440	430
Strontium	Sr	5,6	6,5 - 8,0 - 9,0	5,76
Chloride	Cl ⁻	18746	18700 - 19500 - 20300	19277
Bromine (total bromine, ICP-OES)	Br	68	55 - 67 - 75	69,9
Fluoride	F ⁻	0,78	0,9 - 1,3 - 1,6	0,8
Iodine (Total Iodine, ICP-OES)	I	0,036	0,055 - 0,065 - 0,080	0,037

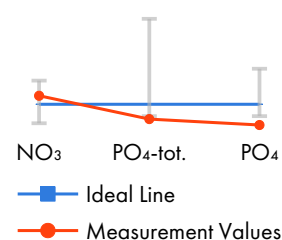
RELATION VALUES OF MACROELEMENTS AND HALOGENS

		measured	Reference Range
Salinity Meas. : Target Value	Sal.	0,97	0,97 - 1,00 - 1,03
KH Measurement : Target Value	KH	1,08	0,90 - 1,00 - 1,17
Magnesium : Salinity	Mg	39,8	33,3 - 38,6 - 42,6
Calcium : Salinity	Ca	12,3	11,1 - 12,1 - 12,9
Strontium: Salinity	Sr	0,16	0,18 - 0,23 - 0,26
Potassium : Salinity	K	12,7	10,6 - 11,3 - 12,4
Boron : Salinity	B	0,14	0,11 - 0,13 - 0,16
Chloride : Salinity	Cl ⁻	551	519 - 557 - 597
Sulfate : Salinity	SO ₄ ²⁻	78,1	71 - 77 - 84
Chloride : Sulfate	Cl ⁻ /SO ₄ ²⁻	7,05	6,6 - 7,2 - 8,0
Magnesium : Calcium	Mg/Ca	3,24	2,7 - 3,2 - 3,6
Calcium : Strontium	Ca/Sr	74,6	44 - 53 - 68
Bromine : Fluoride	Br ⁻ /F ⁻	87,2	34 - 52 - 83
Fluoride : Iodine	F ⁻ /I	21,9	11 - 20 - 29
Fluoride : Sulfur : Strontium	FSS	67,5	80 - 100 - 120



MACRO NUTRIENTS in mg/Liter

		measured	Reference Range
Nitrate	NO ₃ ⁻	6,8	1 - 10
Nitrite	NO ₂ ⁻	0,02	n.d. - 0,15
Phosphorus (ICP-OES)	P	0,005	0,006 - 0,060
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0,015	0,02 - 0,18
ortho-Phosphate (photometric)	PO ₄ ³⁻	0,005	0,02 - 0,10
Silicon	Si	0,14	0,1 - 0,2
Silicate (calculated)	SiO ₂	0,3	0,2 - 0,4

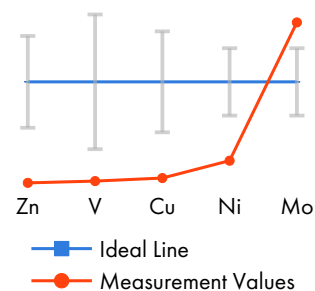


ORGANIC FACTORS

		measured	Reference Range
Nitrate : ortho-Phosphate	NO ₃ ⁻ /PO ₄ ³⁻	1362	90 - 110
Total Phosphate : ortho-Phosphate	PO ₄ ³⁻ _{tot.} /PO ₄ ³⁻	3	1,00
Total Phosphate : Iodine	PO ₄ ³⁻ /I	0,41	0,13 - 1,67
SAK254 (m ⁻¹)		not measured	only with SAK254 upgrade
NPOC (mg/l)	C	not measured	only with organic upgrade
TNb (mg/l)	N	not measured	only with organic upgrade

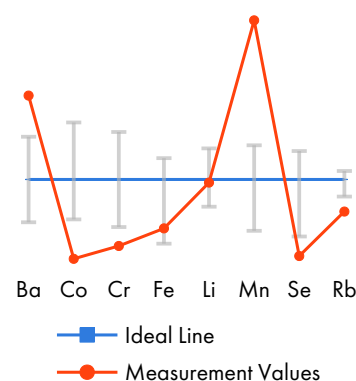
Dynamic Elements in µg/Liter

			measured	Reference Range
Zinc	Zn	MS	n.d.	3 - 5,5 - 8
Vanadium	V	MS	0,105	2 - 6 - 10
Copper	Cu	MS	0,19	2 - 4 - 6
Nickel	Ni	MS	0,987	3 - 4,5 - 6
Molybdenum	Mo	MS	23,82	10 - 15 - 20



PHYSIOLOGICALLY RELEVANT TRACE ELEMENTS in µg/Liter

			measured	Reference Range
Barium	Ba	MS	19,809	5 - max. 50
Cobalt	Co	MS	0,109	n.d. - max. 1,9
Chromium	Cr	MS	0,401	n.d. - max. 2,3
Iron	Fe	MS	0,857	n.d. - max. 2,5
Lithium	Li	OES	212	180 - max. 350
Manganese	Mn	MS	0,286	n.d. - max. 0,25
Selenium	Se	MS	0,158	n.d. - max. 2,0

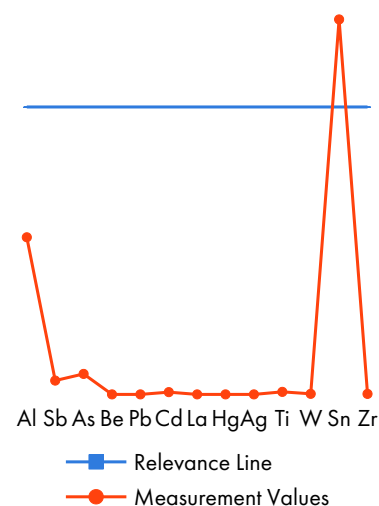


ICP-MS exclusive element:

Rubidium	Rb	MS	62,48	70 - 130
----------	----	----	-------	----------

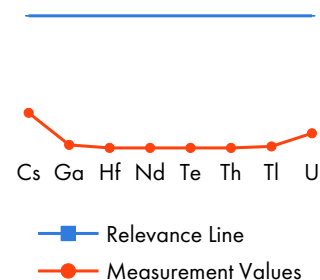
OTHER TRACE ELEMENTS AND POTENTIAL POLLUTANTS in µg/Liter

			measured	Reference Range
Aluminum	Al	OES	16,4	5 - 30
Antimony	Sb	MS	0,48	n.d. - max. 10
Arsenic	As	MS	0,356	n.d.
Beryllium	Be	MS	n.d.	n.d.
Lead	Pb	MS	n.d.	n.d.
Cadmium	Cd	MS	0,039	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	0,087	n.d. - 3,5
Tungsten	W	MS	0,058	n.d. - max. 30
Tin	Sn	MS	6,523	n.d. - max. 10
Zirconium	Zr	MS	0,017	n.d. - 2,2



ICP-MS exclusive elements:

Cesium	Cs	MS	0,797	0,5 - 1,500
Gallium	Ga	MS	0,114	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	0,055	n.d. - 0,100
Uranium	U	MS	0,221	n.d. - 0,100



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	no need for action				
ELEMENTALS S	No dosage				
ELEMENTALS K	Water change			1	
ELEMENTALS B	No dosage				
ELEMENTALS MG	No dosage				
ELEMENTALS SR	70,0 ml	2 days	35,0 ml/day	1	☐ ☐
ELEMENTALS BR	No dosage				
ELEMENTALS F	152,4 ml	2 days	76,2 ml/day	2	☐ ☐
TRACE I	17,2 ml	1 day	17,2 ml/day	2	☐
ELEMENTALS N	No dosage				
ELEMENTALS P	20,5 ml	2 days	10,3 ml/day	2	☐ ☐
TRACE ZN	3,2 ml	2 days	1,6 ml/day	3	☐ ☐
TRACE V	5,8 ml	3 days	1,9 ml/day	3	☐ ☐ ☐
TRACE CU	22,3 ml	2 days	11,2 ml/day	3	☐ ☐
TRACE NI	5,1 ml	1 day	5,1 ml/day	3	☐
TRACE MO	No dosage				
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	35,7 ml	4 days	8,9 ml/day	4	☐ ☐ ☐ ☐
TRACE RB	44,0 ml	2 days	22,0 ml/day	4	☐ ☐

Upgrade options for a Reef ICP Total:

ICP-MS upgrade: Analysis of all trace elements (except aluminum and lithium) by ICP-MS with up to 1000x higher sensitivity compared to ICP-OES and analysis of exclusive elements. ICP-MS exclusive elements cannot be determined by ICP-OES, or not with sufficient sensitivity.

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).