

REEF ICP TOTAL TEST



Sample ID: 20027032

Sample type: Seawater

Volume aquarium in Litre: 650

Sample name: Innovative Marine 150 EXT

Sampling date: 02-26-2024

Date of receipt: 03-05-2024

Method: ICP-OES (inductively coupled plasma with optical emission spectrometry) and further procedures specifically for seawater.

Recommended values are optimized for coral reef aquariums.

You can find detailed information on the elements as well as recommendations for action and precise dosing instructions at:

<https://lab.faunamarin.de/en/home/analysis/120154>

Basic physical-chemical values

	measured	reference range
Conductivity (mS/cm 25°C)	52.8	51,7 - 53,0 - 54,5
Density (kg/Liter 25°C)	1.023	1,022 - 1,023 - 1,024
Specific density (25°C)	1.026	1,026 - - 1,027
Salinity (ppt, psu)	34.8	34,0 - 35,0 - 36,0
pH level	8.24	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	7.7	6,5 - 7,3 - 8,5
CO ₂ (mg/l)	1.29	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	2.75	2,3 - 2,58 - 3,0
odor	none	none
colour	none	none

Major elements, lime elements and halogens in mg/Litre (1 mg = 0,001 g)

		measured	reference range	rel. 35 psu
Chloride	Cl ⁻	19247	18700 - 19500 - 20300	19374
Sodium	Na	10822	9500 - 10700 - 11500	10893
Sulphur	S	853	850 - 900 - 950	859
Sulphate	SO ₄ ²⁻	2556	2550 - 2700 - 2850	2572
Potassium	K	438	380 - 395 - 420	441
Boron	B	5.02	3,80 - 4,50 - 5,50	5.05
Magnesium	Mg	1323	1200 - 1350 - 1450	1332
Calcium	Ca	457	400 - 425 - 440	460
Strontium	Sr	6.4	6,50 - 8,00 - 9,00	6.44
Bromine	Br	72.4	55,0 - 67,0 - 75,0	72.9
Fluoride	F ⁻	1.06	0,90 - 1,30 - 1,60	1.07
Iodine (total iodine, ICP-OES)	I	0.051	0,055 - 0,065 - 0,080	0.051

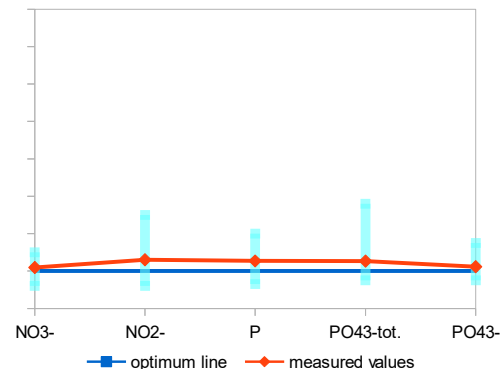
Relational values major elements and halogens - graphic representation salinity line

		relational value	reference range	Salinity line
Salinity measured : nominal	Sal.	0.99	0,97 - 1,00 - 1,03	
KH measured : nominal	KH	1.06	0,90 - 1,00 - 1,17	
Magnesium : Salinity	Mg	38	33,3 - 38,6 - 42,6	
Calcium : Salinity	Ca	13.1	11,1 - 12,1 - 12,9	
Strontium: Salinity	Sr	0.18	0,18 - 0,23 - 0,26	
Potassium : Salinity	K	12.6	10,6 - 11,3 - 12,4	
Boron : Salinity	B	0.14	0,11 - 0,13 - 0,16	
Chloride : Salinity	Cl ⁻	554	519 - 557 - 597	
Sulphate : Salinity	SO ₄ ²⁻	73.5	71,0 - 77,0 - 84,0	
Chloride : Sulphate	Cl ⁻ /SO ₄ ²⁻	7.53	6,60 - 7,20 - 8,00	
Magnesium : Calcium	Mg/Ca	2.89	2,70 - 3,20 - 3,60	
Calcium : Strontium	Ca/Sr	71.4	44,0 - 53,0 - 68,0	
Bromide : Fluoride	Br ⁻ /F ⁻	68.3	34,0 - 52,0 - 83,0	
Fluoride : Iodine	F ⁻ /I	20.8	11,0 - 20,0 - 29,0	

Macronutrients Nutrients

in mg/Litre (1 mg = 0,001 g)

		measured	reference range
Nitrate	NO ₃ ⁻	5.9	1,00 - 10,0
Nitrite	NO ₂ ⁻	0.08	< 0,20
Phosphorus (ICP-OES)	P	0.02	< 0,06
Total Phosphate (calculated)	PO ₄ ³⁻ tot.	0.061	0,02 - 0,18
Ortho-Phosphate (photometric)	PO ₄ ³⁻	0.049	0,02 - 0,10
Silicon	Si	0.08	0,10 - 0,20
Silicate (calculated)	SiO ₂	0.18	0,20 - 0,40



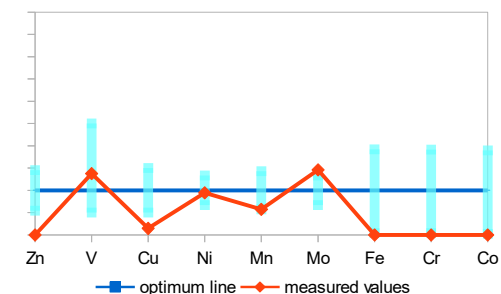
Relational values

Total Phosphate : Nitrate	96	90 - 110
Total Phosphate : Ortho-Phosphate	1.245	~ 1,00
Total Phosphate : Iodine	1.2	0,13 - 1,67

Physiologically relevant trace elements and color-relevant micronutrients

in µg/Litre (1 µg = 0,000001 g)

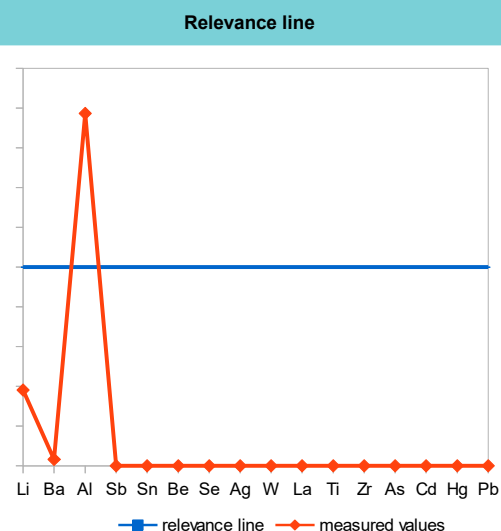
		measured	reference range
Zinc	Zn	n.n.	3,00 - 8,00
Vanadium	V	5.49	2,00 - 10,0
Copper	Cu	0.58	2,00 - 6,00
Nickel	Ni	4.25	3,00 - 6,00
Manganese	Mn	0.1	0,10 - 0,25
Molybdenum	Mo	21.9	10,0 - 20,0
Iron	Fe	n.n.	0,05 - 2,50
Chrome	Cr	n.n.	0,05 - 2,30
Cobalt	Co	n.n.	0,02 - 1,90



Other trace elements and potential harmful substances

in µg/Litre (1 µg = 0,000001 g)

		measured	reference range
Lithium	Li	191	180 - 350
Barium	Ba	6.4	5,00 - 50,0
Aluminium	Al	53.2	5,00 - 30,0
Antimony	Sb	n.n.	< 10,0
Tin	Sn	n.n.	< 10,0
Beryllium	Be	n.n.	0,05 - 1,40
Selenium	Se	n.n.	0,90 - 5,50
Silver	Ag	n.n.	< 10,0
Tungsten	W	n.n.	< 30,0
Lanthanum	La	n.n.	2,00 - 10,0
Titanium	Ti	n.n.	0,50 - 3,50
Zirconium	Zr	n.n.	1,00 - 2,20
Arsenic	As	n.n.	< 1,00
Cadmium	Cd	n.n.	< 1,00
Mercury	Hg	n.n.	< 1,00
Lead	Pb	n.n.	< 1,00



Osmosis water

		measured	reference range
Calcium	Ca	n.n.	n.n.
Potassium	K	n.n.	n.n.
Magnesium	Mg	n.n.	n.n.
Sodium	Na	n.n.	n.n.
Sulphur	S	n.n.	n.n.
Phosphorus (ICP-OES)	P	n.n.	n.n.
Total Phosphate (calculated)	PO ₄ ³⁻ tot.	n.n.	n.n.
Silicon	Si	n.n.	n.n.
Silicate (calculated)	SiO ₂	n.n.	n.n.

in µg/Liter (1 µg = 0,000001 g)

Aluminium	Al	n.n.	n.n.
Lead	Pb	n.n.	n.n.
Cadmium	Cd	n.n.	n.n.
Chrome	Cr	n.n.	n.n.
Iron	Fe	n.n.	n.n.
Copper	Cu	n.n.	n.n.
Lithium	Li	n.n.	n.n.
Nickel	Ni	n.n.	n.n.
Mercury	Hg	n.n.	n.n.
Tin	Sn	n.n.	n.n.
Zinc	Zn	n.n.	n.n.

Measured values of type "> 24" indicate that the concentration is above the calibrated range and therefore cannot be determined definitively. In these cases it is indicated how much at least is present (e.g. 24 µg/l). Abbreviations: n.g. (not measured), n.n. (not detectable).