

REEF ICP TOTAL TEST



Sample ID: 20663629

Sample type: Seawater

Volume aquarium in Litre: 0

Sample name: Aquarium 1

Sampling date: 05-27-2024

Date of receipt: 05-31-2024

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/139215>

Basic physical-chemical values

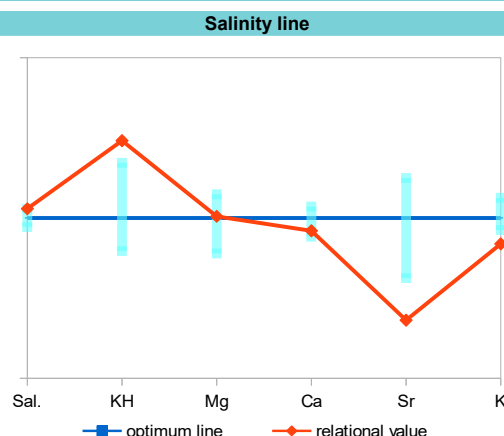
	measured	reference range
Conductivity (mS/cm 25°C)	54.4	51,7 - 53,0 - 54,5
Density (kg/Liter 25°C)	1.024	1,022 - 1,023 - 1,024
Specific density (25°C)	1.027	1,026 - - 1,027
Salinity (ppt, psu)	36	34,0 - 35,0 - 36,0
pH level	8.08	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	9	6,5 - 7,3 - 8,5
CO ₂ (mg/l)	2.17	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	3.21	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 ⁻	19902	18700 - 19500 - 20300	19374
Sodium Na	11258	9500 - 10700 - 11500	10959
Sulphur S	805	850 - 900 - 950	784
Sulphate SO ₄ ²⁻	2412	2550 - 2700 - 2850	2348
Potassium K	363	380 - 395 - 420	353
Boron B	4.18	3,80 - 4,50 - 5,50	4.07
Magnesium Mg	1357	1200 - 1350 - 1450	1321
Calcium Ca	408	400 - 425 - 440	397
Strontium Sr	5.45	6,50 - 8,00 - 9,00	5.31
Bromine Br	66.5	55,0 - 67,0 - 75,0	64.7
Fluoride F ⁻	0.38	0,90 - 1,30 - 1,60	0.37
Iodine (total iodine, ICP-OES) I	0.053	0,055 - 0,065 - 0,080	0.052

Relational values major elements and halogens - graphic representation salinity line

	relational value	reference range
Salinity measured : nominal Sal.	1.03	0,97 - 1,00 - 1,03
KH measured : nominal KH	1.24	0,90 - 1,00 - 1,17
Magnesium : Salinity Mg	37.7	33,3 - 38,6 - 42,6
Calcium : Salinity Ca	11.3	11,1 - 12,1 - 12,9
Strontium: Salinity Sr	0.15	0,18 - 0,23 - 0,26
Potassium : Salinity K	10.1	10,6 - 11,3 - 12,4
Boron : Salinity B	0.12	0,11 - 0,13 - 0,16
Chloride : Salinity Cl ⁻	554	519 - 557 - 597
Sulphate : Salinity SO ₄ ²⁻	67.1	71,0 - 77,0 - 84,0
Chloride : Sulphate Cl ⁻ /SO ₄ ²⁻	8.25	6,60 - 7,20 - 8,00
Magnesium : Calcium Mg/Ca	3.33	2,70 - 3,20 - 3,60
Calcium : Strontium Ca/Sr	74.9	44,0 - 53,0 - 68,0
Bromide : Fluoride Br ⁻ /F ⁻	175	34,0 - 52,0 - 83,0
Fluoride : Iodine F ⁻ /I	7.2	11,0 - 20,0 - 29,0



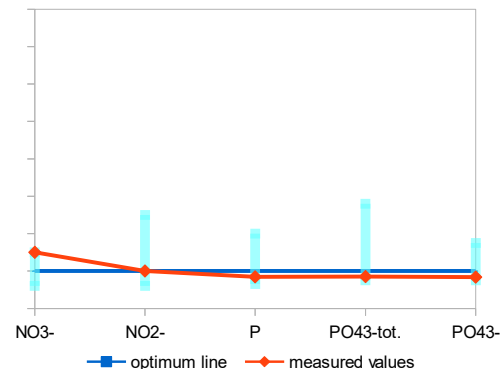
Macronutrients

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

		measured	reference range		
Nitrate	NO ₃ ⁻	10	1,00	-	10,0
Nitrite	NO ₂ ⁻	0.05	< 0,20		
Phosphorus (ICP-OES)	P	0.009	< 0,06		
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0.028	0,02	-	0,18
Ortho-Phosphate (photometric)	PO ₄ ³⁻	0.027	0,02	-	0,10
Silicon	Si	0.14	0,10	-	0,20
Silicate (calculated)	SiO ₂	0.3	0,20	-	0,40

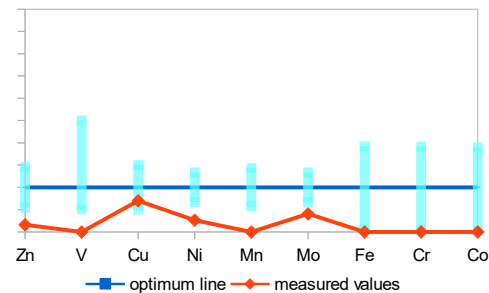
Relational values

Total Phosphate : Nitrate	363	90	-	110
Total Phosphate : Ortho-Phosphate	1.037	~ 1,00		
Total Phosphate : Iodine	0.52	0,13	-	1,67

Nutrients**Physiologically relevant trace elements and color-relevant micronutrients**

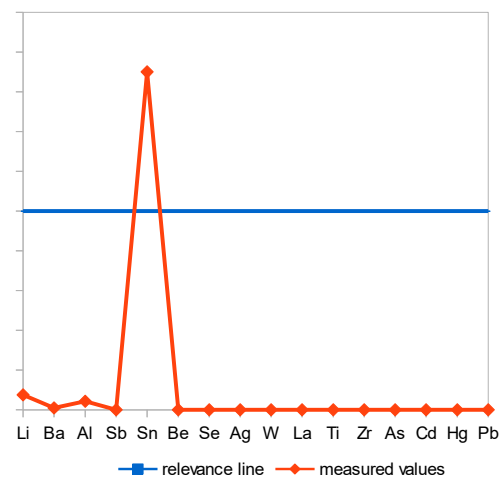
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range		
Zinc	Zn	0.88	3,00	-	8,00
Vanadium	V	n.n.	2,00	-	10,0
Copper	Cu	2.8	2,00	-	6,00
Nickel	Ni	1.18	3,00	-	6,00
Manganese	Mn	n.n.	0,10	-	0,25
Molybdenum	Mo	6.1	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

Dynamic Elements**Other trace elements and potential harmful substances**

in µg/Litre (1 µg = 0,000001 g)

		measured	reference range		
Lithium	Li	38	180	-	350
Barium	Ba	1.9	5,00	-	50,0
Aluminium	Al	1.3	5,00	-	30,0
Antimony	Sb	n.n.	< 10,0		
Tin	Sn	17	< 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		

Relevance line**Osmosis water**

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

		measured	reference range
Calcium	Ca	n.n.	n.n.
Potassium	K	0.07	n.n.
Magnesium	Mg	n.n.	n.n.
Sodium	Na	0.2	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	0.5	n.n.
Silicate (calculated)	SiO ₂	1.07	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	2.15	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).