

REEF ICP TOTAL TEST



Sample ID: 20479428

Sample type: Seawater

Volume aquarium in Litre: 425

Sample name: Redsea 425 G2

Sampling date: 04-25-2024

Date of receipt: 04-30-2024

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/133104>

Basic physical-chemical values

	measured	reference range
Conductivity (mS/cm 25°C)	53.1	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)	35	34,0 - 35,0 - 36,0
pH level	8.34	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	7.8	6,5 - 7,3 - 8,5
CO ₂ (mg/l)	1.03	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	2.78	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 ⁻	19370	18700 - 19500 - 20300	19374
Sodium	Na	10714	9500 - 10700 - 11500	10716
Sulphur	S	839	850 - 900 - 950	839
Sulphate	SO ₄ ²⁻	2514	2550 - 2700 - 2850	2514
Potassium	K	426	380 - 395 - 420	426
Boron	B	6.16	3,80 - 4,50 - 5,50	6.16
Magnesium	Mg	1373	1200 - 1350 - 1450	1373
Calcium	Ca	444	400 - 425 - 440	444
Strontium	Sr	6.82	6,50 - 8,00 - 9,00	6.82
Bromine	Br	69.3	55,0 - 67,0 - 75,0	69.3
Fluoride	F ⁻	1.1	0,90 - 1,30 - 1,60	1.1
Iodine (total iodine, ICP-OES)	I	0.084	0,055 - 0,065 - 0,080	0.084

Relational values major elements and halogens - graphic representation salinity line

		relational value	reference range	Salinity line
Salinity measured : nominal	Sal.	1	0,97 - 1,00 - 1,03	
KH measured : nominal	KH	1.08	0,90 - 1,00 - 1,17	
Magnesium : Salinity	Mg	39.2	33,3 - 38,6 - 42,6	
Calcium : Salinity	Ca	12.7	11,1 - 12,1 - 12,9	
Strontium: Salinity	Sr	0.19	0,18 - 0,23 - 0,26	
Potassium : Salinity	K	12.2	10,6 - 11,3 - 12,4	
Boron : Salinity	B	0.18	0,11 - 0,13 - 0,16	
Chloride : Salinity	Cl ⁻	554	519 - 557 - 597	
Sulphate : Salinity	SO ₄ ²⁻	71.8	71,0 - 77,0 - 84,0	
Chloride : Sulphate	Cl ⁻ /SO ₄ ²⁻	7.71	6,60 - 7,20 - 8,00	
Magnesium : Calcium	Mg/Ca	3.09	2,70 - 3,20 - 3,60	
Calcium : Strontium	Ca/Sr	65.1	44,0 - 53,0 - 68,0	
Bromide : Fluoride	Br ⁻ /F ⁻	63	34,0 - 52,0 - 83,0	
Fluoride : Iodine	F ⁻ /I	13.1	11,0 - 20,0 - 29,0	

Macronutrients

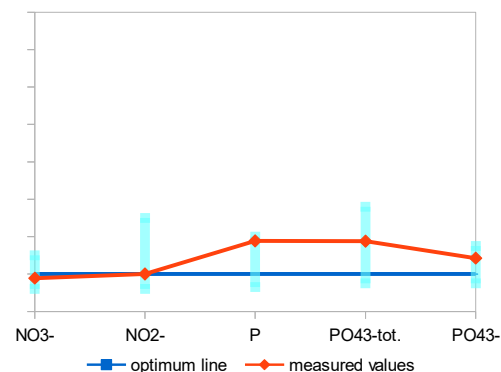
in mg/Litre (1 mg = 0,001 g)

		measured	reference range
Nitrate	NO ₃ ⁻	3.9	1,00 - 10,0
Nitrite	NO ₂ ⁻	0.05	< 0,20
Phosphorus (ICP-OES)	P	0.036	< 0,06
Total Phosphate (calculated)	PO ₄ ³⁻ _{tot.}	0.11	0,02 - 0,18
Ortho-Phosphate (photometric)	PO ₄ ³⁻	0.074	0,02 - 0,10
Silicon	Si	0.07	0,10 - 0,20
Silicate (calculated)	SiO ₂	0.14	0,20 - 0,40

Relational values

Total Phosphate : Nitrate	35	90 - 110
Total Phosphate : Ortho-Phosphate	1.486	~ 1,00
Total Phosphate : Iodine	1.31	0,13 - 1,67

Nutrients

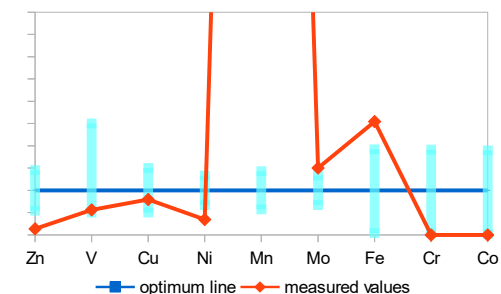


Physiologically relevant trace elements and color-relevant micronutrients

in µg/Litre (1 µg = 0,000001 g)

		measured	reference range
Zinc	Zn	0.74	3,00 - 8,00
Vanadium	V	2.24	2,00 - 10,0
Copper	Cu	3.19	2,00 - 6,00
Nickel	Ni	1.55	3,00 - 6,00
Manganese	Mn	7.39	0,10 - 0,25
Molybdenum	Mo	22.5	10,0 - 20,0
Iron	Fe	3.31	0,05 - 2,50
Chrome	Cr	n.n.	0,05 - 2,30
Cobalt	Co	n.n.	0,02 - 1,90

Dynamic Elements

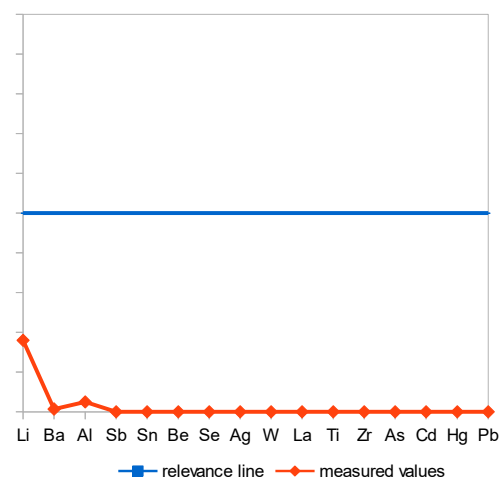


Other trace elements and potential harmful substances

in µg/Litre (1 µg = 0,000001 g)

		measured	reference range
Lithium	Li	180	180 - 350
Barium	Ba	2.9	5,00 - 50,0
Aluminium	Al	1.5	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

Relevance line



Osmosis water

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

		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	0.04	n.n.
Silicate (calculated)	SiO ₂	0.08	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	72	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).