

REEF ICP TOTAL TEST



Sample ID: 20665241

Sample type: Seawater

Volume aquarium in Litre: 200

Sample name: Red Sea Max e170

Sampling date: 07-19-2024

Date of receipt: 07-24-2024

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/151018>

Basic physical-chemical values

	measured	reference range
Conductivity (mS/cm 25°C)	51	51,7 - 53,0 - 54,5
Density (kg/Liter 25°C)	1.022	1,022 - 1,023 - 1,024
Specific density (25°C)	1.025	1,026 - - 1,027
Salinity (ppt, psu)	33.4	34,0 - 35,0 - 36,0
pH level	8	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	7	6,5 - 7,3 - 8,5
CO ₂ (mg/l)	2.03	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	2.5	2,3 - 2,58 - 3,0
odor	none	none
colour	none	none

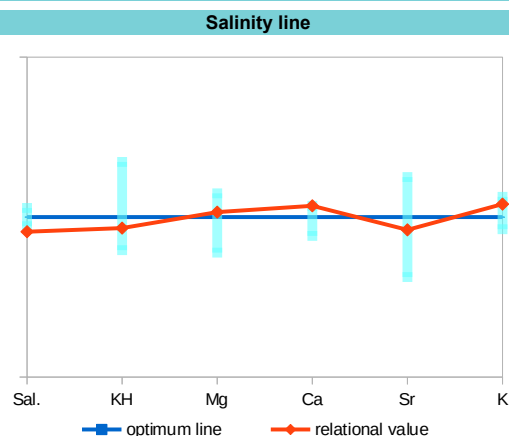
Major elements, lime elements and halogens

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

		measured	reference range	rel. 35 psu
Chloride	Cl ⁻	18515	18700 - 19500 - 20300	19374
Sodium	Na	10377	9500 - 10700 - 11500	10858
Sulphur	S	817	850 - 900 - 950	855
Sulphate	SO ₄ ²⁻	2448	2550 - 2700 - 2850	2561
Potassium	K	411	380 - 395 - 420	430
Boron	B	4.34	3,80 - 4,50 - 5,50	4.54
Magnesium	Mg	1371	1200 - 1350 - 1450	1435
Calcium	Ca	440	400 - 425 - 440	460
Strontium	Sr	7.68	6,50 - 8,00 - 9,00	8.04
Bromine	Br	67.8	55,0 - 67,0 - 75,0	70.9
Fluoride	F ⁻	0.88	0,90 - 1,30 - 1,60	0.92
Iodine (total iodine, ICP-OES)	I	0.021	0,055 - 0,065 - 0,080	0.022

Relational values major elements and halogens - graphic representation salinity line

		relational value	reference range
Salinity measured : nominal	Sal.	0.96	0,97 - 1,00 - 1,03
KH measured : nominal	KH	0.97	0,90 - 1,00 - 1,17
Magnesium : Salinity	Mg	41	33,3 - 38,6 - 42,6
Calcium : Salinity	Ca	13.2	11,1 - 12,1 - 12,9
Strontium : Salinity	Sr	0.23	0,18 - 0,23 - 0,26
Potassium : Salinity	K	12.3	10,6 - 11,3 - 12,4
Boron : Salinity	B	0.13	0,11 - 0,13 - 0,16
Chloride : Salinity	Cl ⁻	554	519 - 557 - 597
Sulphate : Salinity	SO ₄ ²⁻	73.2	71,0 - 77,0 - 84,0
Chloride : Sulphate	Cl ⁻ /SO ₄ ²⁻	7.56	6,60 - 7,20 - 8,00
Magnesium : Calcium	Mg/Ca	3.12	2,70 - 3,20 - 3,60
Calcium : Strontium	Ca/Sr	57.3	44,0 - 53,0 - 68,0
Bromide : Fluoride	Br/F ⁻	77	34,0 - 52,0 - 83,0
Fluoride : Iodine	F ⁻ /I	41.9	11,0 - 20,0 - 29,0



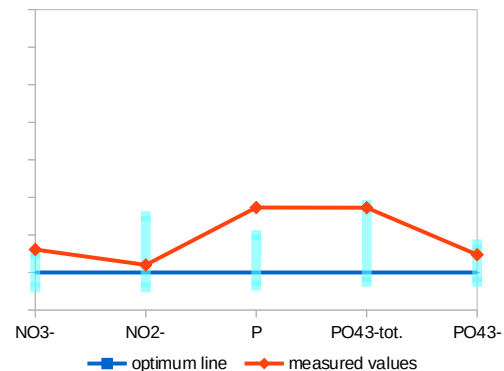
Macronutrients

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

		measured	reference range		
Nitrate	NO ₃ ⁻	11.1	1,00	-	10,0
Nitrite	NO ₂ ⁻	0.07		<	0,20
Phosphorus (ICP-OES)	P	0.058		<	0,06
Total Phosphate (calculated)	PO ₄ ³⁻ tot.	0.178	0,02	-	0,18
Ortho-Phosphate (photometric)	PO ₄ ³⁻	0.078	0,02	-	0,10
Silicon	Si	0.17	0,10	-	0,20
Silicate (calculated)	SiO ₂	0.36	0,20	-	0,40

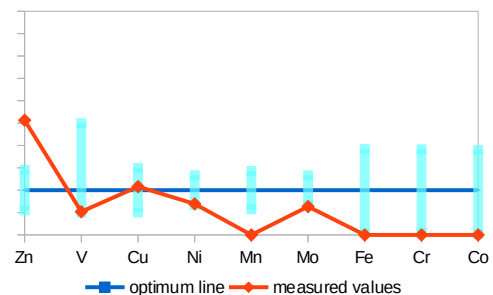
Relational values

Total Phosphate : Nitrate	62.42	90	-	110
Total Phosphate : Ortho-Phosphate	2.282		~	1,00
Total Phosphate : Iodine	8.47	0,13	-	1,67

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

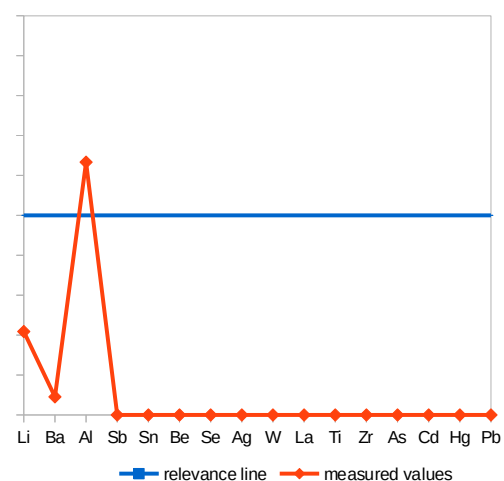
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range		
Zinc	Zn	14.1	3,00	-	8,00
Vanadium	V	2.07	2,00	-	10,0
Copper	Cu	4.32	2,00	-	6,00
Nickel	Ni	3.12	3,00	-	6,00
Manganese	Mn	n.n.	0,10	-	0,25
Molybdenum	Mo	9.5	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	209	180	-	350
Barium	Ba	18.1	5,00	-	50,0
Aluminium	Al	38	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	0.9	n.n.
Silicate (calculated)	SiO ₂	1.93	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).