

# TOTAL REEF ICP TEST



**Sample ID:** 20462444  
**Sample type:** Seawater  
**Volume aquarium in Litre:** 600  
**Sample name:** Peninsula Style  
**Sampling date:** 04-28-2023  
**Date of receipt:** 05-03-2023

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/65214>

## Basic physical-chemical values

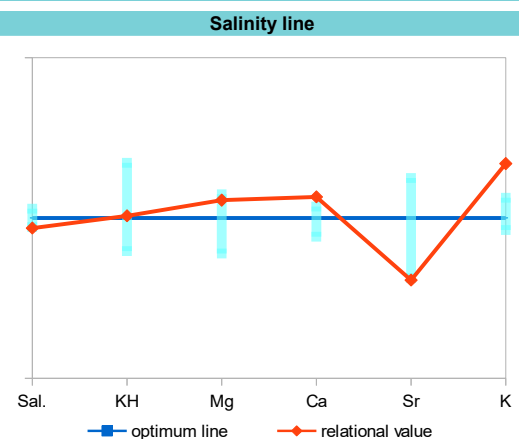
	measured	reference range
Conductivity (mS/cm 25°C)	51.6	51,7 - 53,0 - 54,5
Density (kg/Liter 25°C)	1.023	1,022 - 1,023 - 1,024
Specific density (25°C)	1.026	- 1,027
Salinity (ppt, psu)	33.9	34,0 - 35,0 - 36,0
pH level	7.84	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	7.3	6,5 - 7,3 - 8,5
CO <sub>2</sub> (mg/l)	3.06	0,04 - 2,5
acid binding capacity pH 4,3 (mmol/L)	2.61	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 <sup>-</sup>	18759	18700 - 19500 - 20300	19374
Sodium Na	10510	9500 - 10700 - 11500	10855
Sulphur S	858	850 - 900 - 950	886
Sulphate SO <sub>4</sub> <sup>2-</sup>	2571	2550 - 2700 - 2850	2655
Potassium K	462	380 - 395 - 420	477
Boron B	5.78	3,80 - 4,50 - 5,50	5.97
Magnesium Mg	1425	1200 - 1350 - 1450	1472
Calcium Ca	453	400 - 425 - 440	468
Strontium Sr	6.45	6,50 - 8,00 - 9,00	6.66
Bromine Br	79.8	55,0 - 67,0 - 75,0	82.4
Fluoride F <sup>-</sup>	0.97	0,90 - 1,30 - 1,60	1
Iodine (total iodine, ICP-OES) I	0.063	0,055 - 0,065 - 0,080	0.065

## Relational values major elements and halogens - graphic representation salinity line

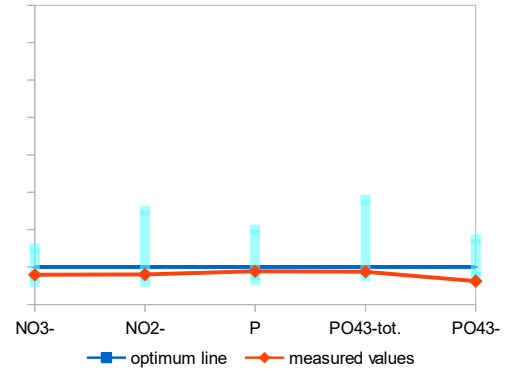
	relational value	reference range
Salinity measured : nominal Sal.	0.97	0,97 - 1,00 - 1,03
KH measured : nominal KH	1.01	0,90 - 1,00 - 1,17
Magnesium : Salinity Mg	42	33,3 - 38,6 - 42,6
Calcium : Salinity Ca	13.4	11,1 - 12,1 - 12,9
Strontium: Salinity Sr	0.19	0,18 - 0,23 - 0,26
Potassium : Salinity K	13.6	10,6 - 11,3 - 12,4
Boron : Salinity B	0.17	0,11 - 0,13 - 0,16
Chloride : Salinity Cl <sup>-</sup>	554	519 - 557 - 597
Sulphate : Salinity SO <sub>4</sub> <sup>2-</sup>	75.9	71,0 - 77,0 - 84,0
Chloride : Sulphate Cl <sup>-</sup> /SO <sub>4</sub> <sup>2-</sup>	7.3	6,60 - 7,20 - 8,00
Magnesium : Calcium Mg/Ca	3.15	2,70 - 3,20 - 3,60
Calcium : Strontium Ca/Sr	70.2	44,0 - 53,0 - 68,0
Bromide : Fluoride Br <sup>-</sup> /F <sup>-</sup>	82.3	34,0 - 52,0 - 83,0
Fluoride : Iodine F <sup>-</sup> /I	15.4	11,0 - 20,0 - 29,0



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

		measured	reference range
Nitrate	NO <sub>3</sub> <sup>-</sup>	2.9	1,00 - 10,0
Nitrite	NO <sub>2</sub> <sup>-</sup>	0.03	< 0,20
Phosphorus (ICP-OES)	P	0.01	< 0,06
Total Phosphate (calculated)	PO <sub>4</sub> <sup>3-</sup> <sub>tot.</sub>	0.03	0,02 - 0,18
Ortho-Phosphate (photometric)	PO <sub>4</sub> <sup>3-</sup>	0.01	0,02 - 0,10
Silicon	Si	0.1	0,10 - 0,20
Silicate (calculated)	SiO <sub>2</sub>	0.2	0,20 - 0,40
<b>Relational values</b>			
Total Phosphate : Nitrate		96	90 - 110
Total Phosphate : Ortho-Phosphate		2.19	~ 1,00
Total Phosphate : Iodine		0.49	0,13 - 1,67

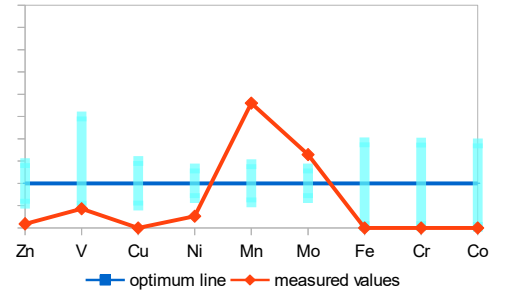
**Nutrients**



**Physiologically relevant trace elements and color-relevant micronutrients**  
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range
Zinc	Zn	0.5	3,00 - 8,00
Vanadium	V	1.71	2,00 - 10,0
Copper	Cu	n.n.	2,00 - 6,00
Nickel	Ni	1.18	3,00 - 6,00
Manganese	Mn	0.49	0,10 - 0,25
Molybdenum	Mo	24.7	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

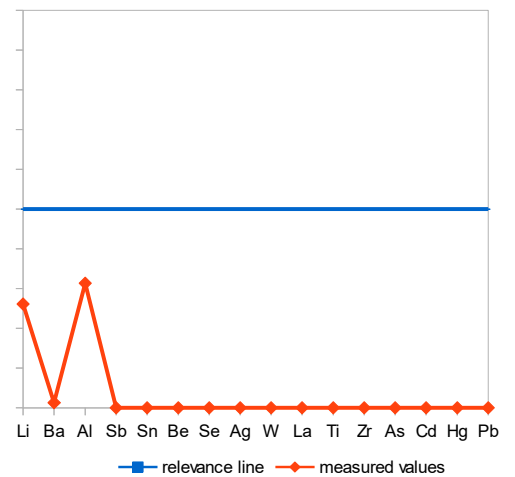
**Dynamic Elements**



**Other trace elements and potential harmful substances**  
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range
Lithium	Li	261	180 - 350
Barium	Ba	5.2	5,00 - 50,0
Aluminium	Al	18.8	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**

		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 <sub>4</sub> <sup>3-</sup> <sub>tot.</sub>	n.n.	n.n.
Silicon	Si	0.15	n.n.
Silicate (calculated)	SiO <sub>2</sub>	0.32	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).