

# REEF ICP TOTAL TEST



**Sample ID:** 20032319  
**Sample type:** Seawater  
**Volume aquarium in Litre:** 910  
**Sample name:** Lost Shepard's Reef  
**Sampling date:** 03-15-2024  
**Date of receipt:** 03-20-2024

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/124006>

## Basic physical-chemical values

	measured	reference range
Conductivity (mS/cm 25°C)	55.3	51,7 - 53,0 - 54,5
Density (kg/Liter 25°C)	1.025	1,022 - 1,023 - 1,024
Specific density (25°C)	1.028	1,026 - - 1,027
Salinity (ppt, psu)	36.6	34,0 - 35,0 - 36,0
pH level	7.97	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	13.2	6,5 - 7,3 - 8,5
CO <sub>2</sub> (mg/l)	4.11	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	4.71	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>	20272	18700 - 19500 - 20300	19374
Sodium	Na	11147	9500 - 10700 - 11500	10653
Sulphur	S	777	850 - 900 - 950	743
Sulphate	SO <sub>4</sub> <sup>2-</sup>	2328	2550 - 2700 - 2850	2225
Potassium	K	442	380 - 395 - 420	422
Boron	B	3.86	3,80 - 4,50 - 5,50	3.69
Magnesium	Mg	1404	1200 - 1350 - 1450	1342
Calcium	Ca	480	400 - 425 - 440	459
Strontium	Sr	3.02	6,50 - 8,00 - 9,00	2.89
Bromine	Br	64.4	55,0 - 67,0 - 75,0	61.5
Fluoride	F <sup>-</sup>	0.18	0,90 - 1,30 - 1,60	0.17
Iodine (total iodine, ICP-OES)	I	0.016	0,055 - 0,065 - 0,080	0.015

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

		relational value	reference range	Salinity line
Salinity measured : nominal	Sal.	1.05	0,97 - 1,00 - 1,03	
KH measured : nominal	KH	1.82	0,90 - 1,00 - 1,17	
Magnesium : Salinity	Mg	38.3	33,3 - 38,6 - 42,6	
Calcium : Salinity	Ca	13.1	11,1 - 12,1 - 12,9	
Strontium: Salinity	Sr	0.08	0,18 - 0,23 - 0,26	
Potassium : Salinity	K	12.1	10,6 - 11,3 - 12,4	
Boron : Salinity	B	0.11	0,11 - 0,13 - 0,16	
Chloride : Salinity	Cl <sup>-</sup>	554	519 - 557 - 597	
Sulphate : Salinity	SO <sub>4</sub> <sup>2-</sup>	63.6	71,0 - 77,0 - 84,0	
Chloride : Sulphate	Cl <sup>-</sup> /SO <sub>4</sub> <sup>2-</sup>	8.71	6,60 - 7,20 - 8,00	
Magnesium : Calcium	Mg/Ca	2.92	2,70 - 3,20 - 3,60	
Calcium : Strontium	Ca/Sr	158.9	44,0 - 53,0 - 68,0	
Bromide : Fluoride	Br <sup>-</sup> /F <sup>-</sup>	357.8	34,0 - 52,0 - 83,0	
Fluoride : Iodine	F <sup>-</sup> /I	11.2	11,0 - 20,0 - 29,0	

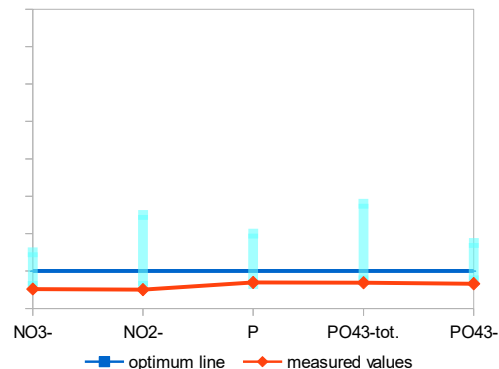
**Macronutrients**

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

		measured	reference range		
Nitrate	NO <sub>3</sub> <sup>-</sup>	0.2	1,00	-	10,0
Nitrite	NO <sub>2</sub> <sup>-</sup>	n.n.	< 0,20		
Phosphorus (ICP-OES)	P	0.005	< 0,06		
Total Phosphate (calculated)	PO <sub>4</sub> <sup>3-</sup> tot.	0.015	0,02	-	0,18
Ortho-Phosphate (photometric)	PO <sub>4</sub> <sup>3-</sup>	0.013	0,02	-	0,10
Silicon	Si	0.22	0,10	-	0,20
Silicate (calculated)	SiO <sub>2</sub>	0.48	0,20	-	0,40

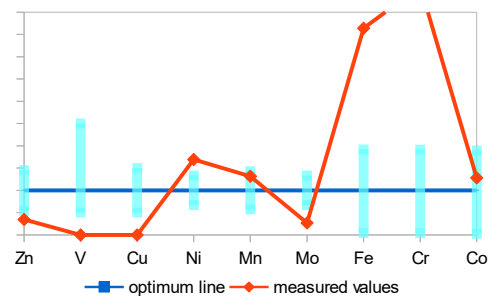
**Relational values**

Total Phosphate : Nitrate	10	90	-	110
Total Phosphate : Ortho-Phosphate	1.154	~ 1,00		
Total Phosphate : Iodine	0.96	0,13	-	1,67

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

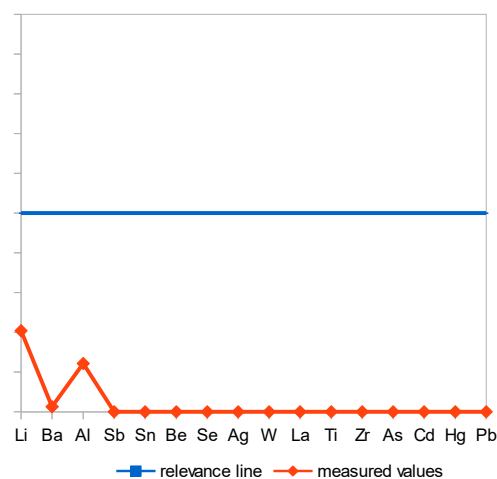
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range		
Zinc	Zn	1.9	3,00	-	8,00
Vanadium	V	n.n.	2,00	-	10,0
Copper	Cu	n.n.	2,00	-	6,00
Nickel	Ni	7.62	3,00	-	6,00
Manganese	Mn	0.23	0,10	-	0,25
Molybdenum	Mo	4	10,0	-	20,0
Iron	Fe	6.03	0,05	-	2,50
Chrome	Cr	6.7	0,05	-	2,30
Cobalt	Co	1.28	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	204	180	-	350
Barium	Ba	5.2	5,00	-	50,0
Aluminium	Al	7.3	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 <sub>4</sub> <sup>3-</sup> tot.	n.n.	n.n.
Silicon	Si	n.n.	n.n.
Silicate (calculated)	SiO <sub>2</sub>	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).