

# REEF ICP TOTAL TEST



**Sample ID:** 20072384

**Sample type:** Seawater

**Volume aquarium in Litre:** 200

**Sample name:** Reefer200

**Sampling date:** 01-07-2024

**Date of receipt:** 01-11-2024

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/108454>

## Basic physical-chemical values

	measured	reference range
Conductivity (mS/cm 25°C)	54.9	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)	36.3	34,0 - 35,0 - 36,0
pH level	8.21	7,90 - 8,30 - 8,40
Carbonate hardness (in °dKH)	6.8	6,5 - 7,3 - 8,5
CO <sub>2</sub> (mg/l)	1.22	0,04 - - 2,5
acid binding capacity pH 4,3 (mmol/L)	2.43	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>	20107	18700 - 19500 - 20300	19374
Sodium	Na	11198	9500 - 10700 - 11500	10789
Sulphur	S	817	850 - 900 - 950	787
Sulphate	SO <sub>4</sub> <sup>2-</sup>	2448	2550 - 2700 - 2850	2358
Potassium	K	442	380 - 395 - 420	426
Boron	B	7.29	3,80 - 4,50 - 5,50	7.02
Magnesium	Mg	1468	1200 - 1350 - 1450	1414
Calcium	Ca	380	400 - 425 - 440	366
Strontium	Sr	8.14	6,50 - 8,00 - 9,00	7.84
Bromine	Br	125	55,0 - 67,0 - 75,0	120.4
Fluoride	F <sup>-</sup>	0.15	0,90 - 1,30 - 1,60	0.14
Iodine (total iodine, ICP-OES)	I	0.037	0,055 - 0,065 - 0,080	0.036

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

		relational value	reference range	Salinity line
Salinity measured : nominal	Sal.	1.04	0,97 - 1,00 - 1,03	
KH measured : nominal	KH	0.94	0,90 - 1,00 - 1,17	
Magnesium : Salinity	Mg	40.4	33,3 - 38,6 - 42,6	
Calcium : Salinity	Ca	10.5	11,1 - 12,1 - 12,9	
Strontium: Salinity	Sr	0.22	0,18 - 0,23 - 0,26	
Potassium : Salinity	K	12.2	10,6 - 11,3 - 12,4	
Boron : Salinity	B	0.2	0,11 - 0,13 - 0,16	
Chloride : Salinity	Cl <sup>-</sup>	554	519 - 557 - 597	
Sulphate : Salinity	SO <sub>4</sub> <sup>2-</sup>	67.4	71,0 - 77,0 - 84,0	
Chloride : Sulphate	Cl <sup>-</sup> /SO <sub>4</sub> <sup>2-</sup>	8.21	6,60 - 7,20 - 8,00	
Magnesium : Calcium	Mg/Ca	3.86	2,70 - 3,20 - 3,60	
Calcium : Strontium	Ca/Sr	46.7	44,0 - 53,0 - 68,0	
Bromide : Fluoride	Br <sup>-</sup> /F <sup>-</sup>	833.3	34,0 - 52,0 - 83,0	<p>— optimum line      ◆ relational value</p>
Fluoride : Iodine	F <sup>-</sup> /I	4.1	11,0 - 20,0 - 29,0	

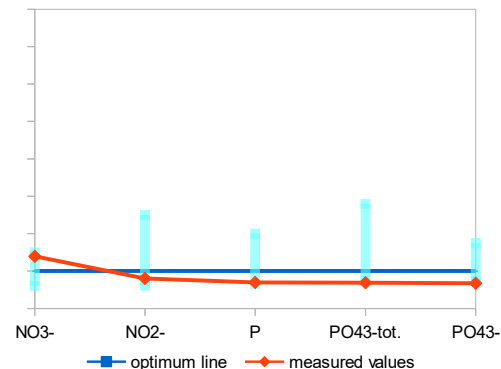
**Macronutrients**

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

		measured	reference range		
Nitrate	NO <sub>3</sub> <sup>-</sup>	8.9	1,00	-	10,0
Nitrite	NO <sub>2</sub> <sup>-</sup>	0.03	< 0,20		
Phosphorus (ICP-OES)	P	0.005	< 0,06		
Total Phosphate (calculated)	PO <sub>4</sub> <sup>3-</sup> <sub>tot.</sub>	0.015	0,02	-	0,18
Ortho-Phosphate (photometric)	PO <sub>4</sub> <sup>3-</sup>	0.014	0,02	-	0,10
Silicon	Si	0.18	0,10	-	0,20
Silicate (calculated)	SiO <sub>2</sub>	0.39	0,20	-	0,40

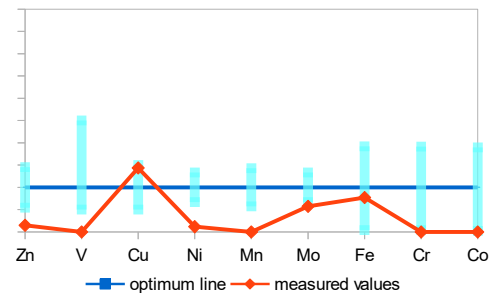
**Relational values**

Total Phosphate : Nitrate	581	90	-	110
Total Phosphate : Ortho-Phosphate	1.071	~ 1,00		
Total Phosphate : Iodine	0.41	0,13	-	1,67

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

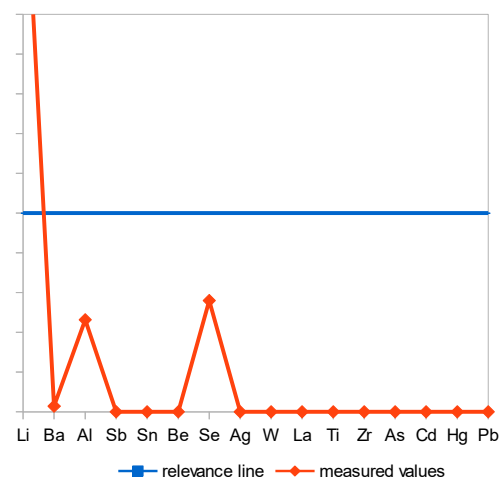
in µg/Litre (1 µg = 0,000001 g)

		measured	reference range		
Zinc	Zn	0.82	3,00	-	8,00
Vanadium	V	n.n.	2,00	-	10,0
Copper	Cu	5.75	2,00	-	6,00
Nickel	Ni	0.52	3,00	-	6,00
Manganese	Mn	n.n.	0,10	-	0,25
Molybdenum	Mo	8.6	10,0	-	20,0
Iron	Fe	1	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	1480	180	-	350
Barium	Ba	5.8	5,00	-	50,0
Aluminium	Al	13.9	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	5.6	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> <sub>tot.</sub>	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).