

# Aquarium water parameters

Ideal ranges and critical limits — the reference reefnotes grades every test against.

As of: 10 October 2026

## Freshwater

| Parameter                                               | Unit | Ideal range         | Critical              |
|---------------------------------------------------------|------|---------------------|-----------------------|
| Nitrate (NO <sub>3</sub> )                              | mg/L | 5 – 25              | above 100             |
| Phosphate (PO <sub>4</sub> )                            | mg/L | 0.1 – 2.0           | above 10.0            |
| Ammonium / Ammonia (NH <sub>4</sub> / NH <sub>3</sub> ) | mg/L | ≤ 0.10              | above 0.25            |
| Nitrite (NO <sub>2</sub> )                              | mg/L | ≤ 0.10              | above 0.50            |
| Silicate (SiO <sub>2</sub> )                            | mg/L | ≤ 5.0               | —                     |
| Potassium (K)                                           | mg/L | 5 – 30              | above 100             |
| Magnesium (Mg)                                          | mg/L | 5 – 20              | above 50              |
| Calcium (Ca)                                            | mg/L | 20 – 80             | —                     |
| Iron (Fe)                                               | mg/L | 0.05 – 0.20         | above 1.00            |
| pH                                                      | –    | 6.0 – 7.5           | below 5.0 · above 9.0 |
| Carbonate hardness (KH)                                 | °dKH | depends on the tank | —                     |
| General hardness (GH)                                   | °dGH | depends on the tank | —                     |
| Carbon dioxide (CO <sub>2</sub> )                       | mg/L | 15 – 35             | above 40              |
| Temperature                                             | °C   | 22 – 26             | below 10 · above 32   |
| Manganese (Mn)                                          | mg/L | ≤ 0.10              | above 2.00            |
| Boron (B)                                               | mg/L | ≤ 0.10              | above 2.00            |
| Molybdenum (Mo)                                         | mg/L | ≤ 0.010             | above 0.500           |
| Zinc (Zn)                                               | mg/L | ≤ 0.050             | above 0.120           |
| Copper (Cu)                                             | mg/L | ≤ 0.010             | above 0.030           |

## Marine (fish-only)

| Parameter                                               | Unit | Ideal range   | Critical                  |
|---------------------------------------------------------|------|---------------|---------------------------|
| Nitrate (NO <sub>3</sub> )                              | mg/L | 0 – 50        | above 100                 |
| Phosphate (PO <sub>4</sub> )                            | mg/L | 0.00 – 1.00   | above 5.00                |
| Ammonium / Ammonia (NH <sub>4</sub> / NH <sub>3</sub> ) | mg/L | ≤ 0.10        | above 0.25                |
| Nitrite (NO <sub>2</sub> )                              | mg/L | ≤ 0.10        | above 0.50                |
| Salinity (specific gravity)                             | SG   | 1.020 – 1.026 | below 1.015 · above 1.030 |

| Parameter       | Unit | Ideal range        | Critical                |
|-----------------|------|--------------------|-------------------------|
| Alkalinity (KH) | °dKH | <b>7.0 – 12.0</b>  | below 5.0 · above 18.0  |
| pH              | –    | <b>8.00 – 8.40</b> | below 7.60 · above 8.60 |
| Temperature     | °C   | <b>24.0 – 27.0</b> | below 20.0 · above 31.0 |
| Calcium (Ca)    | mg/L | <b>380 – 450</b>   | above 550               |
| Magnesium (Mg)  | mg/L | <b>1250 – 1350</b> | above 1600              |
| Copper (Cu)     | mg/L | <b>≤ 0.05</b>      | above 0.05              |

## Reef

| Parameter                                               | Unit | Ideal range          | Critical                  |
|---------------------------------------------------------|------|----------------------|---------------------------|
| Nitrate (NO <sub>3</sub> )                              | mg/L | <b>1.0 – 10.0</b>    | above 50.0                |
| Phosphate (PO <sub>4</sub> )                            | mg/L | <b>0.020 – 0.100</b> | above 1.000               |
| Ammonium / Ammonia (NH <sub>4</sub> / NH <sub>3</sub> ) | mg/L | <b>≤ 0.05</b>        | above 0.25                |
| Nitrite (NO <sub>2</sub> )                              | mg/L | <b>≤ 0.05</b>        | above 0.50                |
| Salinity (specific gravity)                             | SG   | <b>1.024 – 1.026</b> | below 1.020 · above 1.029 |
| Alkalinity (KH)                                         | °dKH | <b>8.0 – 11.0</b>    | below 6.0 · above 14.0    |
| Calcium (Ca)                                            | mg/L | <b>400 – 450</b>     | below 350 · above 550     |
| Magnesium (Mg)                                          | mg/L | <b>1280 – 1380</b>   | below 1100 · above 1600   |
| pH                                                      | –    | <b>8.10 – 8.40</b>   | below 7.80 · above 8.60   |
| Temperature                                             | °C   | <b>25.0 – 27.0</b>   | below 22.0 · above 30.0   |
| Strontium (Sr)                                          | mg/L | <b>7.0 – 10.0</b>    | above 25.0                |
| Iodine (I)                                              | mg/L | <b>0.04 – 0.08</b>   | above 0.50                |
| Copper (Cu)                                             | mg/L | <b>≤ 0.010</b>       | above 0.020               |

Guide values for community tanks. Shrimp, biotope and high-tech planted tanks shift individual targets — the exceptions are on each parameter page.

**Every parameter explained: [reefnotes.com/en/parameters/](https://reefnotes.com/en/parameters/)**