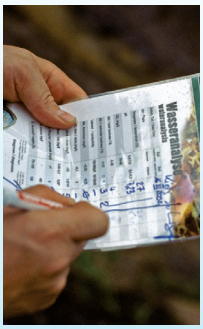
PRO JBL AQUATEST®

# TEST WITH THE BEST!

The new professional JBL Test Kits for the reliable analysis of vital water parameters in your aquarium and pond

# JBL Expeditions




## Imprint

JBL GmbH & Co. KG
Dieselstraße 3
67141 Neuhofen
Germany

Editing and pictures:
JBL GmbH & Co. KG

2nd edition – Feb. 2022

# It’s all guesswork without watertests!

**Testing water – the most important step to understanding your aquarium**

Imagine your physician didn’t use blood tests or stethoscopes. A glance into your body would be almost impossible! Water tests enable you to take a look at the structure of your aquarium/pond. Water can look crystal clear but still can contain poisonous substances. If problems like green water or diseases occur, water tests are an important option to determine the causes.

Unfortunately you won’t find out what problem substances your water might possibly contain just by looking at it. With the help of water tests you can quickly and easily analyse any kind of water (tap, well, aquarium and pond water) and understand through the results which steps, if any, you need to carry out to improve it.

**Healthy aquariums/healthy ponds with conditions close to nature**

The right water values are dependent on the fish stock and the plants in the aquarium/pond. Even if the water looks clear it can be contaminated. With bad values diseases or algae can appear in the aquarium. To maintain a healthy aquarium with conditions close to nature it is important to check and adapt the water values regularly.

For each water analysis JBL provides water tests in the form of rapid tests or colour change tests. These determine a certain value or several values in one go. With these water tests you can recognise algae problems and incorrect nitrate, nitrite, potassium, magnesium values etc.

**JBL Online Laboratory**
Enter your water values into the JBL Online Laboratory and get an in-depth analysis of your values within seconds.
***www.jbl.de/de/wasseranalyse/load_lab/13/wasseranalyse-online-labor***

## Content


# Here's how to test correctly

Water tests help you to understand your aquarium, to pinpoint problems and give you the opportunity to correct the water parameters so that your fish, invertebrates and plants thrive.

**Depending on the procedure we distinguish between the following types of water tests:**

## Colour comparison tests

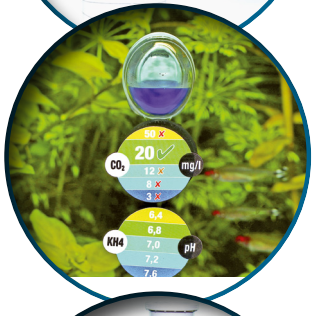
Fill two cuvettes with your aquarium water. Put one cuvette on a colour field of the colour chart to take any inherent water colouring during the reading of the colour into account (JBL comparator system). For better handling put the cuvettes into the plastic holder which you can move back and forth on the colour chart's colour fields. Place the second cuvette on a white field and add indicators which colour the water. Now compare the resulting colour with the colour on the colour chart and read the value.

## Colour change tests

Add water from your aquarium into a cuvette. Add the indicator drop by drop until the colour changes. Depending on the test the colour change is different, e.g. from blue to orange, using the JBL PROAQUA-TEST KH carbonate hardness. The number of drops you need for the colour change to occur equates to the value of the measured parameter. If, for example, you use 5 drops for the colour to change from blue into orange, then the carbonate hardness would be 5 °dKH.


## Turbidimetric test

This includes the JBL PROAQUATEST K Potassium. With the help of reagents and your aquarium water you produce a cloudy, whitish liquid which you add little by little into a test tube with a scale, until the cross below the test tube is no longer recognisable from above. The scale then tells you how much potassium is available in your water.




## Permanent-Test

This includes the JBL PROAQUATEST $CO_2$-pH Permanent. Add an indicator to a tranparent vessel, which is attached to the inside of your aquarium pane. The indicator reacts with the $CO_2$ from your aquarium water and indicates, depending on the $CO_2$ quantity, a specific colour which can be compared with an affixed scale. This way you can read the $CO_2$ content on a 24-hour basis!

## Test strips

These include the JBL PROAQUATEST EASY 7in1 and JBL PROSCAN. The strips test pH, GH, KH, $NO_2$, $NO_3$, chlorine and calculate the $CO_2$ content.
Dip a test strip into your aquarium water for three seconds, shake it several times HORIZONTALLY so that excess water can drip off and compare it with a colour scale which shows you the resulting value. For JBL PROSCAN put the test strip onto a special colour chart from which you take a photo with your smartphone and a free ProScan app after a waiting time of 60 seconds. The app reads out the colours and gives you the resulting values extremely precisely, plus a recommendation on how to improve your water parameters.

# Tips for carrying out the water tests

Always hold the bottles with the indicator liquids vertically. Then the droplet size is always the same.

Always discard the first drop since it is not always full sized. Keep a light pressure on the bottle after the first drop, so that no air is drawn in and all the following drops come out steadily.

Always position the cuvettes on a white background to better recognise the colours during the colour change tests.

Always thoroughly rinse the cuvettes with tap water after testing (better would be distilled water – JBL Dest).

If your test has a comparator block, please use it!! A manual moving of the glass vials on the colour charts WITHOUT a comparator block leads to a different colour perception, because the plastic block throws a shadow onto the liquid part of the vials.

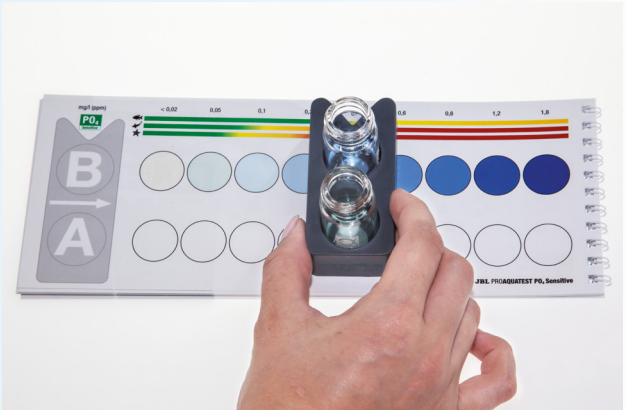
For JBL PROSCAN you need to know the following: don't shake the water off after dipping the test strip as you would shake a fever thermometer. It's better to tap it gently on a cloth or on absorbant paper. Make sure your mobile phone doesn't cast a shadow when photographing the colour chart with the test strip.

**Water testing is that simple:**

**1** Use the enclosed syringe to fill each of the test containers with sample water.

**2** Add the reagent to one of the test containers.

**3** Move the comparator block with the two test containers backwards and forwards on the colour chart with the notch pointing to the values, until the colour of the sample treated with reagent matches the colour under the reference sample as closely as possible.



# pH-value

Recommended values: Freshwater community aquarium 6,8-8,2;
Lake Malawi/Lake Tanganyika aquarium 7,8-9,2;
Freshwater Aquascaping 6,4-7,2; Marine aquarium 7,8-8,4; Pond 7,5-8,5

pH

The pH level indicates the acidity and the alkalinity of the water. The more acidic the water is (the more sour it is), the lower is the pH level. The less acid and more bases the water contains, the higher the pH level. If the recommended pH level is too low, the aquarium inhabitants will no longer enjoy optimal living conditions. The bacterial filter activities will also drop sharply, and with values below 6 they will come to a standstill. That's why the pH level should be increased to the specified value.

The pH is a logarithmic value. This means that a reduction from pH 8 to pH 7 describes a tenfold increase and from 8 to 6 a hundredfold increase of the acidity!

**Increasing the pH level**
Please check first, if the carbonate hardness (KH) corresponds to the recommended value. Before manipulating (raising or reducing) the pH level the KH MUST be at the recommended value. In most cases the pH regulates itself to the desired level. If however the pH level needs to be raised, this can be done by the addition of JBL pH-Plus (liquid pH increaser). A stronger water surface movement can also increase the pH level of your aquarium, but at the same time expel the plant nutrient $CO_2$. As a rule only aquarium owners who want to breed fish from areas with hard water need to increase the pH value. As soon as you have raised the carbonate hardness by adding JBL Aquadur or JBL Aquadur Malawi-Tanganjika the pH level will also settle at a higher level. An exception are the lakes of Sulawesi where a pH value of 8 can be found in the water. Movement in the water surface helps simulate this.

**Reducing the pH level**
Please check first if the carbonate hardness (KH) corresponds with the recommended value. Before manipulating (raising or reducing) the pH level the KH MUST be at the recommended value. In most cases the pH regulates itself to the desired level. If, however, the pH level needs to be reduced, there are three options:
Addition of acid: Through the addition of JBL pH-Minus (pH lowering liquid) the pH level can be reduced gradually. However the carbonate hardness will also drop simultaneously.

Adding $CO_2$: A dosed addition of $CO_2$ (carbon dioxide) will not only fertilise the plants but will also lower the pH level. One part of the $CO_2$ reacts with water to form carbon acid ($H_2CO_3$), which reduces the pH level as do all other acids. For aquariums from 30 to 160 litres we recommend the JBL ProFlora Bio-$CO_2$ fertiliser system (PROFLORA Bio), for aquariums from 60 to 1000 litres the Disposable (u) or Refillable (m) systems.

Adding peat: With JBL Tormec activ (activated peat pellets) as a part of the filter material you can slightly reduce the pH level. The activated pellets contain about 25 % humic acids which act as a pH reducer. In addition a slight softening occurs.

## pH JBL PROAQUATEST pH 3.0-10.0

**Quick test to determine the acidity in ponds and freshwater/marine aquariums**


- Simple and reliable monitoring of the water values in ponds and aquariums. Determines the ideal pH value in fresh and marine water
- Quick test: fill plastic cuvette with sample water, add reagent, read value of the sample off colour chart
- When to use: for setting up a new aquarium: daily for one week, afterwards weekly
- Package contents: 1 complete kit with one reagent pH 3.0-10.0, 1 cuvette and 1 colour chart; contents for approx. 50 measurements

## pH JBL PROAQUATEST pH 6.0-7.6

**Quick test to determine the pH values in the range 6.0-7.6 in freshwater aquariums**


- Simple and reliable monitoring of the aquarium water values. Determines the ideal pH value in freshwater aquariums
- Laboratory comparator system to compensate the inherent water colour: fill plastic cuvette with sample water, add reagent to one cuvette, place both cuvettes in holder, read values off colour chart
- When to use: for setting up a new aquarium: daily for one week, afterwards weekly
- Package contents: 1 quick test, pH test 6.0-7.6 for approx. 80 measurements. Incl. reagent, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available

## pH JBL PROAQUATEST pH 7.4-9.0

**Quick test to determine the pH values in the range 7.4-9.0 in ponds, freshwater and marine aquariums**


- Simple and reliable monitoring of the water values in aquariums and ponds. Determines the ideal pH value in fresh and marine water
- Laboratory comparator system to compensate the inherent water colour: fill plastic cuvette with sample water, add reagent to a cuvette, place cuvettes in holder, read values off colour chart
- When to use: for setting up a new aquarium: daily for one week, afterwards weekly
- Package contents: 1 quick test, pH test 7.4-9.0 for approx. 80 measurements. Incl. reagent, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available

## pH/KH JBL PROAQUATEST POND Check pH/KH

**Quick test to determine the acidity and pH stability in garden ponds**


- Monitors the water values simply and reliably: determines the pH value and carbonate hardness in pond, tap and well water
- Fill the measuring tubes with pond water, add 5 drops of reagent to each, swivel gently until the colouring stabilises, wait 1 minute, compare colouring on colour chart
- The pH should be 7.5-8.5 and not fluctuate greatly. The KH stabilizes the pH and should be at least 4 ° dKH
- Package contents: quick test, pH and KH test incl. 2 measuring tubes, pH reagent, KH reagent, colour scale and instructions

# Water hardness

GH KH

## General hardness (GH), carbonate hardness (KH)

Water hardness is defined as general hardness (GH) and carbonate hardness (KH). The correct scientific definition of both values doesn't really help the layman. The GH is the total sum of all alkaline earth metals (e.g. calcium and magnesium ions) in the water and KH is the total sum of all carbonates and hydrogen carbonates.
Simply put: The general hardness is a measure for a certain mineral content in the water and the carbonate hardness indicates the pH stability of the water. For most aquarium and pond owners the KH is the more important value, because the KH stabilises the pH level (acidity of the water). If the KH is too low (below 4 ° dKH), the pH value varies widely and can either drop downwards (sudden drop of pH/acidity) or it can move upwards. Both can be deadly for the organisms and therefore it is imperative to check the KH (JBL PROAQUATEST KH) and to stabilise it (JBL Aquadur). Normally the GH is higher than the KH. In some tropical waters, as in Lake Malawi and Lake Tanganyika, this relation is reversed: The KH is higher than the GH. What is the reason for that? Soda sources which increase the KH but are not attributed to the GH are responsible for a high proportion of sodium hydrogen carbonates. To reproduce this situation in the aquarium JBL has created the JBL Aquadur Malawi-Tanganjika. With this special salt you can reproduce the natural water composition.

### Increasing the water hardness/why increase the water hardness?

A few animal species aren't comfortable in very soft water (low hardness). If your tap water is soft, it is better to harden it for the sake of your animals. Carbonate hardness below 4 is very soft water and bears the risk of pH fluctuations. Here we urgently advise you to increase the KH.

### Increasing the general hardness (GH)

Table salt (sodium chloride) doesn't help! It only contains sodium (Na) and chloride (Cl). Both substances are not part of the GH. Normally it is never necessary to only increase the GH (without doing the same with the KH). To raise GH and KH to the same extent the special salt JBL Aquadur works very well.

### Increasing the carbonate hardness (KH)

Also here table salt doesn't help. The addition of sodium bicarbonate raises the KH, but not the GH. With JBL Aquadur you can increase both the same way. With JBL Aquadur Malawi-Tanganjika the increase of KH is stronger than that of GH. Biological processes can completely consume the aquarium's carbonate hardness! This is due to the fact that water plants (and algae!) dissolve the essential $CO_2$ out of the KH, if there is not enough free $CO_2$ available in the water. As a consequence there is a drastic reduction of KH. This process is called biogenic decalcification.
Calcareous materials (coral sand, seashells, marble, coral skeletons etc.) only increase the hardness when the pH is below 7. Only then is there enough acid to dissolve these materials in water. Nothing happens with alkaline pH levels (above 7.0).

### Decreasing the water hardness: Why is this necessary?

Many aquarium inhabitants originate from soft water areas such as the Amazon or the Rio Negro. To meet their specific needs a reduction of hardness is recommended. But instead of fiddling around with the water parameters every few days a regular partial water change is a much better idea!

Again many water plants have their origin in soft rather than hard waters.

### Reducing the hardness

For regions with hard tap water a reduction of the water hardness can help accommodate the specific needs of invertebrates, fish and plants. Water softening is quite simple with the help of a reverse osmosis unit. The unit is connected to the water tap to filter up to 95 % of all hardeners (and also pollutants) out of the water.

The addition of pH decreasing aids (e.g. JBL pH-Minus) result in a reduction of KH but must be implemented carefully. The addition of a pH reducer needs to be carried out in very small steps and permanently monitored by means of KH and pH tests. Do not perform at all with a KH of below 4! A water change is only useful, when the tap water has a lower hardness than the aquarium water.

**Recommended GH values:**

Freshwater community aquarium 8-25 °dGH

Lake Malawi/Lake Tanganyika aquarium 5-20 °dGH

Freshwater Aquascaping 6-15 °dGH

Marine aquarium not measurable with GH test because GH too high. Please test calcium and magnesium separately

Pond 8-30 °dGH

**Recommended KH values:**

Freshwater community aquarium 5-16 °dKH

Lake Malawi/Lake Tanganyika aquarium 7-20 °dKH

Freshwater Aquascaping 4-10 °dKH

Marine aquarium 7-13 °dKH

Pond 5-20 °dKH

## GH JBL PROAQUATEST GH General hardness

**Quick test to determine the general hardness in freshwater aquariums & ponds**

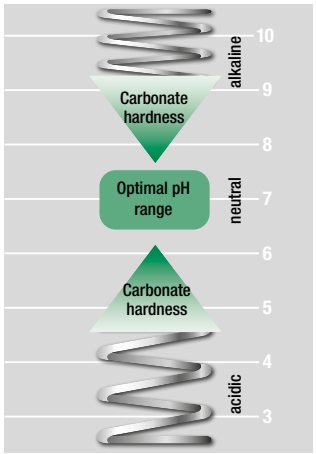

- Simple and reliable monitoring of the water values in aquariums/ ponds. Determines the ideal general hardness in freshwater aquariums and ponds
- Colour change test: fill plastic cuvette with sample water, add reagent drop by drop until colour changes from red to green. Number of drops = level of general hardness
- When to use: for setting up a new aquarium: once a week, afterwards once a month
- Package contents: 1 GH quick test, incl. one reagent and plastic cuvette. Reagent refill separately available


## KH JBL PROAQUATEST KH Carbonate hardness

**Quick test to determine the carbonate hardness (KH) in freshwater/marine aquariums and ponds**


- Simple and reliable monitoring of the water values in aquariums and ponds. Determines the ideal carbonate hardness in fresh and marine water
- Colour change test: fill plastic cuvette with sample water, add reagent drop by drop until colour changes from blue to yellow. Number of drops = level of carbonate hardness
- When to use: for setting up a new aquarium: once a week, afterwards once a month
- Package contents: 1 KH quick test, incl. one reagent and plastic cuvette. Reagent refill separately available


*Lake Tanganyika, JBL Expedition 2010*

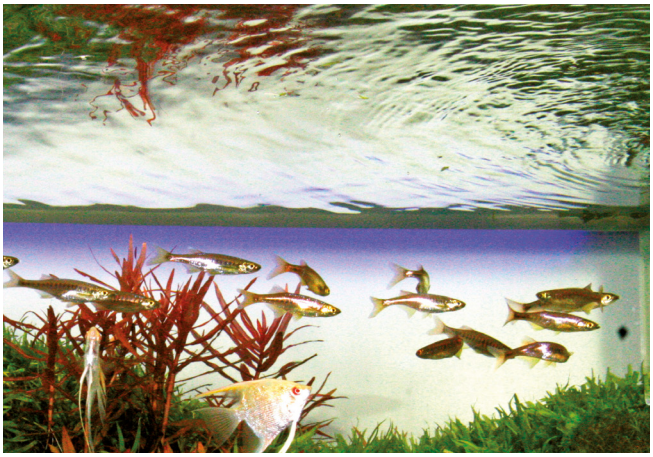


# Oxygen

Recommended values (mg/l): Freshwater community aquarium 6-10; Freshwater Aquascaping 6-10; Marine aquarium 6-10; Pond 6-13

$O_2$

Oxygen is the elixir of life of most living beings in the water and therefore essential. The warmer the water, the less oxygen can be dissolved in the water. That's why an additional aeration of the water is advisable and necessary. With too low oxygen contents the bacterial degradation capacity for pollutants drops, and below 2 mg/l fish begin to suffer from oxygen deficiency. An important fact is that plants, exposed to light, produce oxygen but that they also consume oxygen in darkness. This is why it can be advisable during times of vigorous plant and algae growth to aerate the water. It is not true that low oxygen contents are a direct result of high carbon dioxide contents. Both gases can reach their saturation limit concurrently. But it is also often the case that a lot of carbon dioxide ($CO_2$) gets expelled during an oxygen supply caused by surface movement (current, air stones, water jet pipes etc.). When the plants get supplied with carbon dioxide through a $CO_2$ fertiliser system, the $CO_2$ content in the water rises simultaneously with the oxygen content because the plants produce oxygen during the assimilation.



### Increasing the oxygen content

The oxygen content in the water is ensured by a normal surface movement of the water. Aquariums which are of above average height often have too small a surface in relation to their water volume. This can make additional aeration necessary, or stronger water surface movements by means of water spray bars or the like. In aquariums without plants an additional oxygen supply by air stone can also be useful. For aquariums with good plant growth, aeration through air stones or strong water surface movements is not useful because the essential carbon dioxide ($CO_2$) for the plant growth will be expelled.

### Oxygen saturation depending on the water temperature

| °C | mg/l | °C | mg/l |
|---|---|---|---|
| 4 | 12,7 | 20 | 8,84 |
| 6 | 12,1 | 21 | 8,68 |
| 8 | 11,5 | 22 | 8,53 |
| 10 | 10,9 | 23 | 8,38 |
| 11 | 10,7 | 24 | 8,25 |
| 12 | 10,4 | 25 | 8,11 |
| 13 | 10,2 | 26 | 7,99 |
| 14 | 10,0 | 27 | 7,86 |
| 15 | 9,80 | 28 | 7,75 |
| 16 | 9,56 | 29 | 7,64 |
| 17 | 9,37 | 30 | 7,53 |
| 18 | 9,18 | 31 | 7,42 |
| 19 | 9,00 | 32 | 7,32 |

## $O_2$ JBL PROAQUATEST $O_2$ Oxygen

**Quick test to determine the oxygen content in freshwater/marine aquariums and ponds**


- To determine the current oxygen content and as a result indicate whether measures to increase the $O_2$ content need to be taken
- Quick test to monitor the aeration: fill glass vial with sample water, add reagent, read sample value off colour chart
- When to use: once a week in newly set up aquariums and if there are signs of oxygen deficiency. Clear colour indication from yellow to wine-red
- Package contents: 1 quick test. Contents for approx. 40 measurements. Incl. 3 reagents, syringe, glass vial with screw cap and colour chart. Reagent refill separately available

# Copper

Recommended values (mg/l): Freshwater community aquarium <0,05; Freshwater Aquascaping <0,05; Marine aquarium <0,05; Pond <0,05

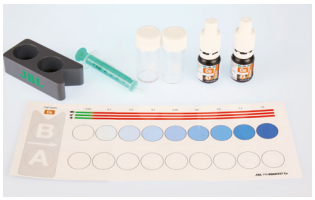
**Cu**

The heavy metal copper is often dissolved off water pipes. It is deadly for invertebrates, such as shrimps. The water conditioner JBL Biotopol C encases and neutralises copper. Instead of JBL Biotopol it is better to use JBL Biotopol C when keeping invertebrates. You can combat the velvet disease (Oodinium) by adjusting the copper content to 0.3 mg/l with the help of medication. Therefore please don't use this medication for invertebrates!

## Cu JBL PROAQUATEST Cu Copper

**Quick test to determine the copper content in fresh and marine water aquariums and ponds**


- Simple and reliable monitoring of the water values in aquariums/ ponds. Determines the ideal copper value and monitors heavy metals in fresh and marine water
- Laboratory comparator system to compensate the inherent water colour: fill plastic cuvette with sample water, add reagents to one cuvette, place cuvettes in holder, read values off colour chart
- Use: when setting up a new aquarium, in cases of invertebrate and fish deaths and when dosing copper-bearing medications
- Package contents: 1 copper (Cu) quick test for approx. 50 measurements, incl. 2 reagents, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available



# Iron

Recommended values (mg/l): Freshwater community aquarium 0,05-0,4; Freshwater Aquascaping <0,1-0,6; Marine aquarium <0,05; Pond <0,2

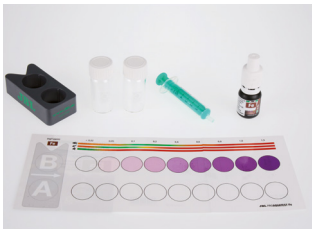
**Fe**

Along with potassium, magnesium and others, iron is one of the most important trace elements which are essential for the plants to stay alive. In case of Iron deficiency plants often show a light green leaf colour (chlorosis).
With JBL PROAQUATEST Fe Iron you can check the iron content within a few minutes and with the help of liquid fertilisers (JBL PROFLORA Ferropol, JBL PROSCAPE Fe +MICROELEMENTS) it can be properly adjusted.
Also use the ProScape dosage calculator, to get calculated the exact consumption and with that the demand for your aquarium/plants.

## Fe JBL PROAQUATEST Fe Iron

**Quick test to determine the iron content in fresh and marine water aquariums and ponds**


- Simple and reliable monitoring of the water values in aquariums/ ponds. Determines the ideal iron value in fresh and marine water
- Laboratory comparator system to compensate the inherent water colour: fill plastic cuvette with sample water, add reagent to both cuvettes, place cuvettes in holder, read values off colour chart
- Use: 1 x after setting up a new aquarium, afterwards weekly. In case of green algae problems or when plants don't grow properly
- Package contents: 1 iron quick test for approx. 50 measurements, incl. reagent, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available

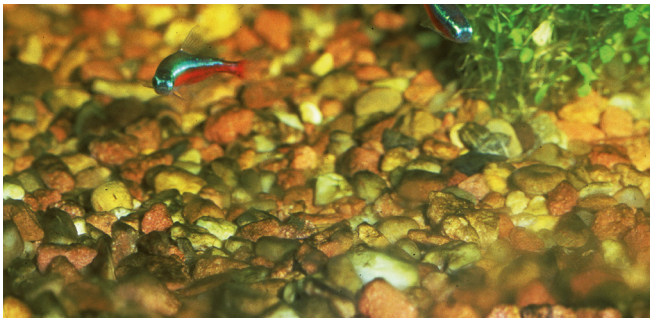


# Silicates

Recommended values (mg/l): Freshwater community aquarium <1,2; Freshwater Aquascaping <0,4; Marine aquarium <0,4

$SiO_2$

Silicon compounds in the water lead to diatom problems. Silicon compounds in aquatics are associated with silicates, $SiO_2$, silicic acid and silicon. The silicate contents in tap water are continuously increasing in many regions which more and more frequently lead to diatom problems. Diatoms, also referred to as diatomea, need silicates for their sceletal development. As soon as you reduce the silicic acid content in the water by means of a silicate remover (JBL SilicatEx Rapid), diatoms can't live any longer. With a silicate test (JBL PROAQUATEST $SiO_2$) the amount of the silicate content in your tap and aquarium water can be simply and quickly carried out.



*Diatoms (Diatomea)*

## $SiO_2$ JBL PROAQUATEST $SiO_2$ Silicate

**Quick test to determine the silicate content in freshwater & marine aquariums**


- Silicates (silicic acid) are the cause of unsightly diatoms. With this test you determine the silicate content for diatom control in freshwater and marine aquariums
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to one vial, place vials in holder, read values off colour chart
- Use: when setting up a new aquarium, for checking tap water and during diatom problems
- Package contents: 1 silicate test for approx. 50 measurements, incl. 2 reagents, 2 glass vials with screw caps, dosing spoon, syringe, comparator block and colour scale. Reagent refill separately available

# Nitrogen compounds

$NH_4$ $NO_2$ $NO_3$

## Ammonium, nitrite, nitrate

In the aquarium nitrogen compounds are produced which can create problems in certain quantities or even be lethal for the animals. Therefore ammonium ($NH_4$)/ammonia ($NH_3$), nitrite ($NO_2$) and nitrate ($NO_3$) must be measured regularly. For this purpose easy to use and highly accurate individual or combined test kits are available.
People often talk of the so called nitrogen cycle in which the substances mentioned break down into the next one respectively. These degradation processes take mainly place in the filter system (and the substrate). There protein is broken down to ammonium by bacteria (or with a pH level over 6.0 also to ammonia). This is then also bacterial transformed into toxic nitrite and this again into the non-toxic but algae-promoting nitrate.

New aquariums do not yet have sufficient bacteria to start the breakdown processes. That's why they need the support of bacterial starters (JBL Denitrol, JBL FilterStart, JBL FilterBoost).
Merely waiting before adding the animals is often not enough, because the existing bacteria reproduce only with a sufficient supply of nutrients. See Bacterial initial phase.

Recommended values (mg/l):

**$NH_4$**: Freshwater community aquarium <0,1; Freshwater Aquascaping <0,1; Marine aquarium <0,05; Pond <0,1

**$NO_2$**: Freshwater community aquarium <0,1; Freshwater Aquascaping <0,1; Marine aquarium <0,05; Pond <0,1

**$NO_3$**: Freshwater community aquarium 10-30; Freshwater Aquascaping 5-20; Marine aquarium <5; Pond <5

### Ammonium ($NH_4$)/ammonia ($NH_3$)

This is the first link of the chain for the nitrogen decomposition. Ammonium is excreted through the gills of the fish or created during the bacterial conversion of proteins. Ammonium ($NH_4$) is non-toxic, but an increased concentration in the water hinders the fish from "breathing" the ammonium out of its gills. At a pH level of over 6.0, part of the non-toxic ammonium converts into toxic ammonia (see table ammonium/ammonia). Normally the ammonium produced is quite quickly oxidized to nitrate via nitrite by means of bacteria. If ammonium can be detected in the water this is a sign of a disturbance of the bacterial degradation processes. The bacteria required for this are either not sufficiently available (new aquarium) or affected (medications, addition of salt, UV-C water clarifier).

### Reducing the ammonium/ammonia content

In case of an ammonia poisoning (fish dart backwards and forwards, gasp at the water surface) an immediate lowering of the pH level is a possible first aid measure, as this converts the toxic ammonia back into non-toxic ammonium on the spot. Further steps are then necessary to deal with the problem long term. These steps include a water change and the addition of a bacteria starter (JBL Denitrol, JBL FilterStart, JBL FilterBoost).

### Increasing the ammonium/ammonia content

This is never necessary and therefore not useful.

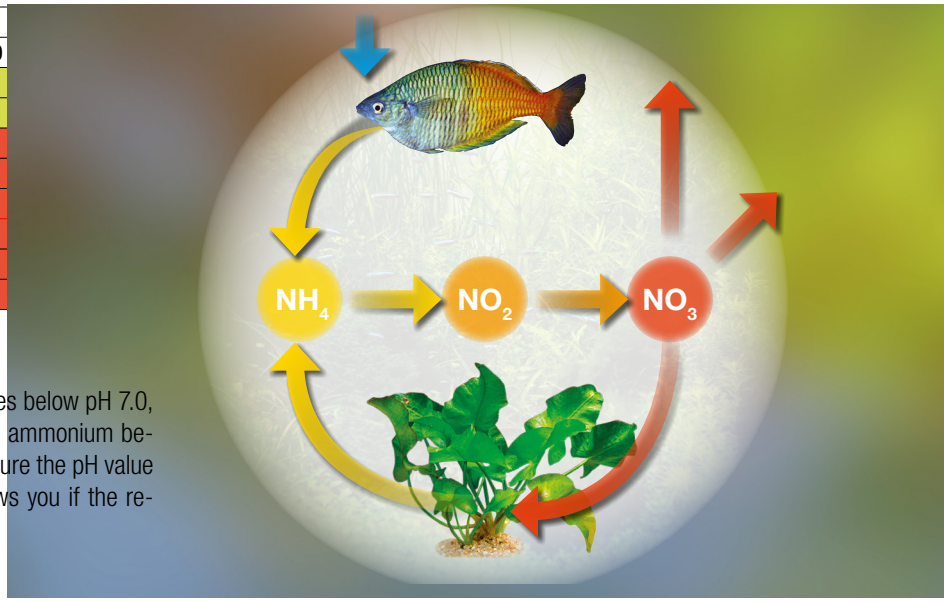
## $NH_4$ JBL PROAQUATEST $NH_4$ Ammonium

**Quick test to determine ammonium/ammonia content in freshwater/marine water aquariums and in ponds**


- Simple and reliable monitoring of ammonium ($NH_4$) and ammonia ($NH_3$) in aquariums/ponds. Checks the biological balance (bacterial activity) in freshwater and marine water
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to one vial, place vials in holder, read values off colour chart and table
- Use: when setting up a new freshwater aquarium: once a day. Initial setup with marine water: once a week. For use in case of fish diseases or fish deaths.
- Package contents: 1 quick test, ammonium test $NH_4$ for approx. 50 measurements. Incl. 3 reagents, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available

| pH | $NH_4$ mg/l | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0,1 | 0,2 | 0,4 | 0,8 | 1,2 | 2,0 | 3,0 | 5,0 |
| 7,0 | | | | | | | | |
| 7,5 | | | | | | | | |
| 8,0 | | | | | | | | |
| 8,2 | | | | | | | | |
| 8,4 | | | | | | | | |
| 8,6 | | | | | | | | |
| 8,8 | | | | | | | | |
| 9,0 | | | | | | | | |

*Toxicity of ammonia as a factor of the pH value at 25 °C*




Ammonium does NOT change into ammonia at values below pH 7.0, but as the pH value rises, more and more non-toxic ammonium becomes toxic ammonia. That's why you need to measure the pH value before the ammonium content. The table then shows you if the resulting ammonia content is a problem.

## Nitrite ($NO_2$)

Nitrite is highly toxic, just like ammonia. It inhibits the oxygen transport in the blood (also in humans) and leads to inner suffocation. In the water it should never show up on the JBL nitrite test because bacteria normally break it down into the non-toxic nitrate as soon as it develops. The detection of nitrite is either a sign of a disturbed bacterial activity or it indicates that an excessive occurrence of pollutants is overtaxing the bacteria. This is an indication that the care measures have to be checked: Is it a result of overfeeding? Have there been too few water changes? Has an antibacterial remedy been added? Has salt been added (salt kills bacteria)?
In exceptional cases increased nitrite levels can occur in newly set up aquariums because the bacteria are not fully developed yet. A good bacterial starter (JBL Denitrol, JBL FilterStart) helps here and a gradual stocking of fish. Never add all new fish in one go. Put them in the aquarium at intervals. That way the bacteria can adjust to the increasing amount of pollutants. See Bacterial initial phase.

### Reducing nitrite content

Immediate water change (50 %), less feeding, regular partial water change (30 % every 14 days), regular siphoning of the substrate by means of a gravel cleaner (Gravel cleaning), adding bacteria (JBL Denitrol, JBL FilterStart).

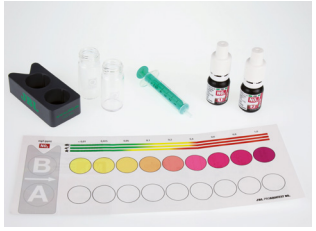
### Increasing the nitrite content

This is never necessary and would be dangerous.

## $NO_2$ JBL PROAQUATEST $NO_2$ Nitrite

**Quick test to determine the nitrite content in freshwater/marine aquariums & ponds**


- Nitrite is a toxic nitrogen compound, which is formed when the bacterial balance is disturbed or when setting up a new aquarium. The test shows the exact nitrite content of the water
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to one vial, place vials in holder, read values off colour chart
- Use: when setting up a new freshwater aquarium: daily for 3 weeks. For initial setup with marine water: once a week. For use with fish diseases or fish deaths
- Package contents: 1 nitrite test for approx. 50 measurements, incl. 2 reagents, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available



## Nitrate ($NO_3$)

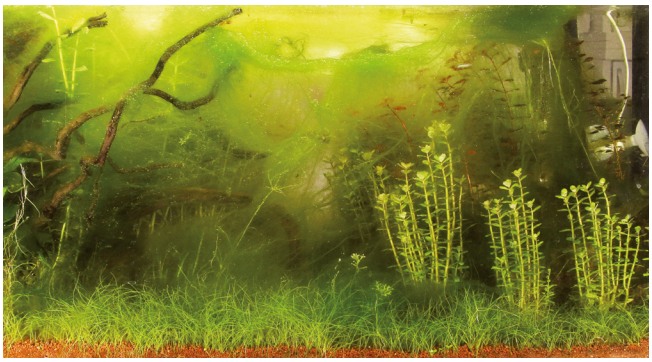
Nitrate develops during the nitrogen degradation by Nitrobacter bacteria under aerobic (oxygen-rich) conditions from nitrate and gets broken down to nitrogen gas ($N^2$), carbon dioxide ($CO_2$) and water ($H_2O$) under anaerobic (oxygen-free) conditions. Although nitrate itself is (unlike nitrite) non-toxic, high nitrate levels can stunt the growth of fish (especially in juveniles) and can also inhibit the growth of many plant species. The main problem with nitrate is that it encourages algae and this is why the nitrate levels should never exceed the recommended 50mg/l.

### Reducing nitrate content

A regular water change prevents high nitrate levels, assuming that it is not present in high concentration in the tap water used. It is therefore vital to check tap water parameters. With the help of a reverse osmosis unit up to 50 % of nitrate can be removed from tap water. Through the use of JBL NitratEX both tap water and aquarium water can be free of nitrate. JBL NitratEx contains synthetic resins, which withdraw nitrate from flowing water. Once the exchange capacity has been exhausted, it can be simply and quickly regenerated with sodium chloride. JBL BioNitratEx has been designed for long-term use in the filter. This specific filter material consists of nutrition balls for bacteria. In the course of time beneficial cleansing bacteria settle on the balls so that the bottom layers of bacteria no longer receive oxygen-rich water. This is when bacteria start the denitrification process to degrade nitrate. However, this is only possible because they are able to remove the nutrition they need for it from the balls. Thus the balls are steadily eaten up by the bacteria and you can easily trace the progress of nitrate degradation and see when you need to refill with new balls.

### Increasing the nitrate level

In most aquariums an increase of the nitrate level is not useful. There are only two cases where it should be added: in heavily planted aquariums with few fish (often aquascapes) and in shrimp aquariums, where almost nothing is fed, a nitrogen deficiency for the plants can result. For such cases JBL has a dedicated fertiliser range with individual fertilisers, which also contain nitrogen in form of nitrate (JBL PROSCAPE N MACROELEMENTS or JBL PROSCAPE NPK MACROELEMENTS).



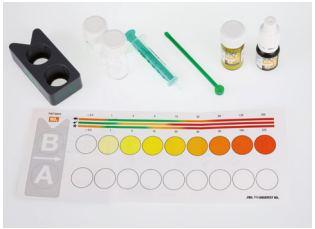
*Algae growth through increased nitrate and phosphate levels*

*No algae growth through the use of JBL PhosEx Ultra and JBL BioNitrat Ex*

## $NO_3$ JBL PROAQUATEST $NO_3$ Nitrate

**Quick test to determine the nitrate content in freshwater/marine aquariums and ponds**


- Determines the optimal nitrate value for perfect plant growth or possible cause of algae growth in freshwater and marine water
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to one vial, place vials in holder, read values off colour chart
- Use: when setting up a new freshwater aquarium: 1 x weekly. When setting up a new marine aquarium: 1 x weekly. With green algae problems
- Package contents: 1 nitrate test for approx. 40 measurements, incl. 2 reagents, 2 glass vials with screw caps, syringe, dosing spoon, comparator block and colour scale. Reagent refill separately available



# Phosphate

Recommended values (mg/l): Freshwater community aquarium <0,4; Freshwater Aquascaping 0,5-1,8; Marine aquarium <0,02-0,1; Pond <0,1

$PO_4$ Sensitive

Phosphates act as strong algae fertilisers, just like nitrate ($NO_3$). They serve as nutrients for plants but they are often present in high concentrations. They are thus present in excess and promote algae growth. Almost every fish food contains phosphate, which is important for the bone structure of the fish. However many fish foods contain too much phosphate because they use cheap fish meal for their production. JBL does not use cheap fish meal and instead processes high quality proteins made of fish fillet, to which a well-balanced mineral mix (ash content) is added afterwards for healthy fish growth. It is essential to choose the right food quantity to prevent overfeeding and the exposure to excess phosphate that may arise from this. Be careful with frozen food! Most frozen foods are real phosphate bombs!!!
When they die plant parts and algae release the phosphate amounts which were bound during their growth, and therefore need to be removed. Aquatic plant fertilisers, filter materials and additives in the water, such as peat extracts, should never contain phosphate. Please check the products you are using. JBL products are guaranteed phosphate-free. A regular water change is surely one of the best measures against high phosphate levels, assuming that the tap water doesn't contain any phosphate. Please check your tap water before using it.

Phosphates react quite quickly with minerals in the water and precipitates (sediments). It is therefore useful to use a gravel cleaner during a partial water change. Clean the filter too, as filter sludge contains large amounts of phosphate.

**Reducing phosphate level**
In addition to the measures mentioned above, phosphate can easily, quickly and reliably be removed with the special filter material JBL PhosEX ultra and/or be removed with the help of a liquid phosphate remover like JBL PhosEx rapid. If you wish not only to remove phosphate, but also nitrite and nitrate, we recommend the dedicated filter media JBL ClearMec plus.

**Increasing phosphate value**
In most aquariums an increase of the phosphate level is not useful. There are only two cases where phosphate should be added: in heavily planted aquariums with few fish (often aquascapes) and in shrimp aquariums, where almost nothing is fed, a phosphate deficiency for the plants can result. For such cases JBL has a dedicated fertiliser range with individual fertilisers, which also contain phosphate (JBL PROSCAPE P MACROELEMENTS / JBL PROSCAPE NPK MACROELEMENTS).

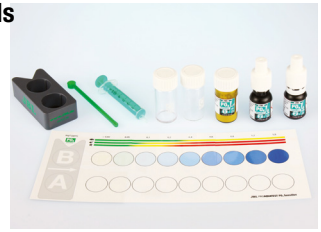
*A lot of plants means high phosphate requirements*

$PO_4$ Sensitive

## JBL PROAQUATEST $PO_4$ Phosphate sensitive

**Quick test to determine the phosphate content in fresh and marine water aquariums and ponds**


- Determines the phosphate value for perfect plant growth or possible cause of algae growth in freshwater/marine water & ponds
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to a vial, place vials in holder, read values off colour chart
- Use: when setting up a new freshwater or marine aquarium: once a week. With algae problems and for checking tap water
- Package contents: 1 test kit for approx. 50 measurements, incl. 2 reagents, 2 glass vials with screw caps, syringe, dosing spoon, comparator block and colour scale. Reagent refill separately available



## $PO_4$ Koi — JBL PROAQUATEST $PO_4$ Phosphate Koi

**Quick test to determine the phosphate content in garden and koi ponds**

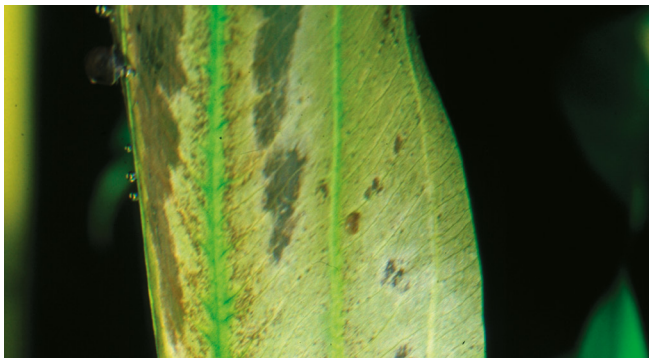

- Simple and reliable monitoring of the water values in koi ponds: determines the algae nutrient phosphate from <0,1 up to 10 mg/l
- Use: fill both cuvettes with 5 ml pond water, add reagents, compare on colour chart and read off value
- For measuring and routinely monitoring the phosphate content, graduation on colour scale: <0.1; 0.25; 0.5; 1.0; 1.5; 2.0; 3.0; 5.0; 10 mg/l
- Package contents: quick test, phosphate test $PO_4$, incl. reagents, glass vials with screw caps, syringe, dosing spoon, comparator block and colour scale.

# Potassium

Recommended values (mg/l): Freshwater community aquarium 10-30; Freshwater Aquascaping 10-30; Marine aquarium 380-420

**K**

Along with iron and magnesium, as well as other trace elements, potassium is one of the most important minerals which plants need for their growth. Potassium deficiency becomes apparent through a light, unhealthy leaf colour and a bulging of the leaf veins.
With the JBL PROAQUATEST K Potassium you can check the potassium content within a few minutes and with the help of liquid fertilisers (JBL PROFLORA Ferropol, JBL PROSCAPE K MACROELEMENTS, JBL PROSCAPE NPK MACROELEMENTS) it can properly be adjusted.
Also use the ProScape dosage calculator, to get the exact consumption calculated and with this your aquarium/plants' demand.

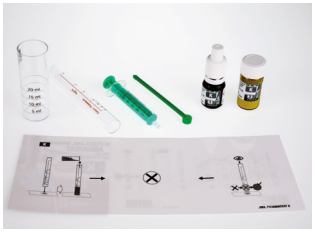


*Protruding leaf veins and light green fern leaves indicate a potassium deficiency*

## K — JBL PROAQUATEST K Potassium

**Quick test to determine the potassium content in freshwater aquariums**


- For perfect aquarium plant growth: determines the ideal potassium value to monitor the fertilisation of freshwater aquariums
- Quick test: fill cuvette with sample water, add reagents, fill cloudy sample water into special glass vial until underlying cross is no longer visible, read the quantity you have filled. This value is equivalent to the potassium content in mg/l
- Often too low a potassium content leads to stagnating plant growth, although all other factors such as $CO_2$, iron and light are present. Fertilisers such as JBL
- Package contents: 1 potassium test kit for approx. 25 measurements, incl. 2 reagents, special glass vial, syringe, dosing spoon and colour chart. Reagent refill separately available



# Calcium

(Only marine aquarium) recommended value 400-480 mg/l

**Ca**

Calcium is part of the general hardness (GH) but it is not usually tested separately in freshwater. The calcium content is only of major importance in saltwater aquariums. There it is the fundamental prerequisite for growth in many invertebrate animals.

**Increasing calcium**

In saltwater there are different ways to raise the calcium content in the water:

JBL CalciuMarin: This product is ideally suited to increase the content of calcium easily, safely and without great technical effort and costs. One pack of JBL CalciuMarin contains 2 bags which content has to be put into the aquarium in two places as far apart from each other as possible and at different times, as written in the instructions. A reaction will then occur between the two components inside the aquarium water. Calcium chloride and strontium chloride (bag 1) react with sodium hydrogen carbonate (bag 2) to create calcium bicarbonate, strontium bicarbonate and harmless sodium chloride. This process has come to be known in marine fish keeping under the name “Balling Method”.

Calcium reactor: A calcium reactor is a container with calcareous material (calcium carbonate, coral gravel, marble chips etc.) inside. The saltwater passing through gets enriched with carbon dioxide ($CO_2$) whereby the pH level drops and the calcareous material dissolves slowly in the water. As a result hydrogen carbonates (KH) and calcium (Ca) dissolve in the water and get added drop by drop to the aquarium water. Calcium reactors are always used in combination with $CO_2$ systems. JBL provides all the necessary components for this: compressed gas cylinders with 500 g and 2 kg contents, pressure reducer, solenoid valve and pH control unit.

Lime water: Lime water is defined as a saturated solution of calcium hydroxide (CaOH) which gets added drop by drop to the aquarium water. Through its hydroxide part (-OH) it raises the pH level of the saltwater and its calcium content. It doesn’t contain any carbonate hardeners ($HCO_3$), although it seems to have a KH of approx. 12–15. This illusion in all KH tests is caused by the hydroxide ions. The trend in marine aquariums is no longer towards lime water but towards calcium reactors and professional compounds, such as JBL CalciuMarin.

*A lot of corals means high Ca and Mg consumption*

## Ca JBL PROAQUATEST Ca Calcium

**Quick test to determine the calcium content in marine aquariums**


- Simple and reliable monitoring of the aquarium water values. Determines the optimal calcium value for vigorous and healthy coral growth
- Easy to use: Fill cuvette with sample water, add reagents and count drops until colour changes. Number of drops x 20 = Ca content
- Reach: the number of measurements depends on the level of the calcium content
- Package contents: 1 Ca test kit, incl. 3 reagents, plastic cuvette, syringe, dosing spoon. Reagent refill separately available

# Magnesium

Recommended values: Freshwater community aquarium 5-10 mg/l; Marine aquarium 1200-1400 mg/l

Mg

Magnesium is part of the general hardness (GH) of the water. In freshwater the magnesium content is separately measured during the care of sensitive plants and by aquascapers and is adjusted through the adding of JBL PROSCAPE Mg MACROELEMENTS. A simple yet professional way to determine its demand in your aquarium or for your aquarium plants is the ProScape dosage calculator.
In marine aquariums magnesium has a different significance: With a too low magnesium content desired red coralline algae don't grow or they grow poorly. Too high magnesium levels are also not useful since the water has only limited absorption capacity for minerals and salts. If this capacity is occupied by too high magnesium levels, other essential minerals can't dissolve in sufficient quantities anymore or they precipitate.

**Increasing magnesium content**
By adding JBL MagnesiuMarin (liquid preparation) magnesium can be set easily, quickly and reliably to any desired level.

**Reducing magnesium content**
Through water change the value can be reduced again to the desired level.

## Mg JBL PROAQUATEST Mg-Ca Magnesium-Calcium

**Quick test for to determine the magnesium/calcium in marine aquariums**


- Simple and reliable monitoring of the aquarium water values. Determines the ideal magnesium and calcium value for vigorous and healthy growth in corals and calciferous red algae
- Easy to use: first carry out the calcium test, then the magnesium test; subtract the result of the calcium test from the result of the magnesium test – the result gives you the magnesium content
- Reach: the number of measurements depends on the level of the calcium and magnesium content
- Package contents: 1 test kit Mg and 1 test kit Ca, incl. 5 reagents, 2 plastic cuvettes, syringe and dosing spoon. Reagent refill separately available

## Mg Fresh water JBL PROAQUATEST Mg Magnesium Fresh water

**Quick test to determine the magnesium content in freshwater aquariums**


- For perfect aquarium plant growth: determines the ideal magnesium value to monitor the fertilisation of freshwater aquariums
- Laboratory comparator system to compensate the inherent water colour: fill glass vials with sample water, add reagents to one vial, place vials in holder, read values off colour chart
- Magnesium deficiency in aquatic plants leads to stagnant growth and light leaf colour. Remedy: Increase magnesium-containing fertiliser: JBL Ferropol, JBL ProScape Mg Macroelements
- Package contents: 1 Mg test kit for approx. 60 measurements, incl. 3 reagents, 2 glass vials with screw caps, syringe, comparator block and colour scale. Reagent refill separately available

# Carbon dioxide

Recommended values (mg/l): Freshwater community aquarium 15-30; Freshwater Aquascaping 20-35

$CO_2$

$CO_2$ is the main food source for your aquarium plants, just as carbohydrates, fats and proteins are the main food sources for humans. $CO_2$ occurs in small amounts in every small aquarium through the exhalation of fish, bacteria, and - at night - plants. If you know the pH value and the carbonate hardness of your water you can read how much $CO_2$ is present in your aquarium water in the table shown.

**How much $CO_2$ does your aquarium water contain?**

This table shows you firstly how much $CO_2$ is dissolved in your aquarium water and secondly what $CO_2$ content would be perfect for your plants. To use the table you need the pH value and the amount of the carbonate hardness of your aquarium water. From both values result a $CO_2$ content which you can easily read off. If, for example, your pH content 7.4 and the KH 6 °dKH, you have 7 mg/l $CO_2$ in the water. But most aquatic plants need slightly higher $CO_2$ levels between 14 and 23 mg/l for a vigorous and healthy growth. Very sensitive species even need up to 23 – 36 mg/l. With the help of a $CO_2$ fertiliser system you then can increase the $CO_2$ content in the water and thus set [adjust] at the same time the perfect pH value for your fish.

With a JBL PROAQUATEST $CO_2$-pH Permanent you can permanently monitor the $CO_2$ content or immediately check the carbon dioxide content with the JBL PROAQUATEST $CO_2$ Direct. With the use of a $CO_2$ fertiliser system you increase the $CO_2$ content in your aquarium water and promote the plant growth. But it is also important that your plants don't miss other nutrients, such as iron or potassium, otherwise not even a $CO_2$ fertilisation would really be much help.


| | KH 2 | KH 4 | KH 6 | KH 8 | KH 10 | KH 12 | KH 14 | KH 16 | KH 18 | KH 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| pH 7,8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 9 | 10 |
| pH 7,6 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | 15 |
| pH 7,4 | 2 | 5 | 7 | 10 | 12 | 14 | 17 | 19 | 21 | 24 |
| pH 7,3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| pH 7,2 | 4 | 8 | 11 | 15 | 19 | 23 | 27 | 30 | 34 | 38 |
| pH 7,1 | 5 | 10 | 14 | 19 | 24 | 29 | 33 | 38 | 43 | 48 |
| pH 7,0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| pH 6,9 | 8 | 15 | 23 | 30 | 38 | 45 | 53 | 60 | 68 | 76 |
| pH 6,8 | 10 | 19 | 29 | 38 | 48 | 57 | 67 | 76 | 86 | 95 |
| pH 6,7 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | | |
| pH 6,6 | 15 | 30 | 45 | 60 | 75 | 90 | | | | |
| pH 6,4 | 24 | 48 | 72 | 96 | | | | | | |
| pH 6,2 | 38 | 76 | | | | | | | | |

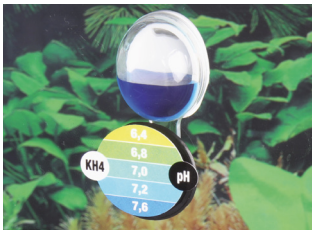
Recommended range $CO_2$: Community aquarium JBL ProScape

Permanent
$CO_2$
plus pH

## JBL PROAQUATEST $CO_2$-pH Permanent

**Permanent test to determine the acid/carbon dioxide content in freshwater aquariums**


- Simple and reliable monitoring of the aquarium water values. Permanent direct measurement of the pH value and carbon dioxide content in freshwater aquariums
- Permanent test for fertiliser control: place reagent in the permanent test device and attach to the aquarium pane, using suction cups. Compare reagent colour with colour scale sticker and read off value
- Indication of pH value (6.4 – 7.8) and $CO_2$ content
- Package contents: 1 $CO_2$-pH permanent test, display vessel with suction cup, 1 reagent (+ 1x refill) and colour scale sticker. Reagent refill and indicators separately available




$CO_2$
plus pH

## JBL PROAQUATEST $CO_2$ Direct

**Quick test to determine the carbon dioxide content (main nutrient for plants) in freshwater aquariums**


- Simple and reliable monitoring of the aquarium water values. Determines the optimal carbon dioxide content for freshwater aquariums
- Procedure: fill plastic cuvette with sample water, add reagent drop by drop until pink colour remains stable. Number of drops x 2 = $CO_2$ content in mg/l
- To use during periods of poor or no plant growth and fish mortality: once a week
- Package contents: 1 $CO_2$ quick test incl. 2 reagents, plastic cuvette and colour chart. Reagent refill separately available

*Such perfect plant growth is only possible with a CO2 system!*

## JBL PROAQUATEST COMBISET Plus Fe

**Test case with the most important water tests in freshwater aquarium, incl. iron test**


- Monitors the water values in aquariums simply and reliably. Determines: pH value, carbonate hardness, iron, nitrite, nitrate, $CO_2$ (calculation via table)
- Easy to use: add aquarium water to cuvette with syringe, add indicator and compare colour on colour scale, or count drops until colour changes in KH test
- Comparator system takes the inherent water colouring into account. $CO_2$-content is determined by pH value and KH value using the table
- Childproof reagent bottles, waterproof plastic case, refill reagents separately available
- Package contents: 1 test case for aquariums. 7 reagents, 3 glass vials, syringe, measuring spoon, comparator block, plastic cuvette, colour charts, report sheets, operating instructions

## JBL PROAQUATEST COMBISET Plus $NH_4$

**Test case with the most important water tests for freshwater aquariums, incl. ammonium test**


- Monitors the water values in aquariums simply and reliably. Determines: pH value, carbonate hardness, nitrite, nitrate and ammonium/ammonia, as well as $CO_2$ calculation using the table
- Easy to use: add aquarium water to cuvette with syringe, add indicator and compare colour on colour scale, or count drops until colour changes in KH test
- Comparator system takes the inherent water colouring into account. $CO_2$-content is determined by pH value and KH value using the table
- Childproof reagent bottles, waterproof plastic case, refill reagents separately available
- Package contents: 1 test case for aquariums, 9 reagents, 3 glass vials, syringe, measuring spoon, comparator block, colour charts, report sheets, operating instructions

## JBL PROAQUATEST LAB

**Test case with 13 water tests for the analysis of tap water and freshwater aquariums**


- Monitors water values in aquariums simply and reliably. Determines pH (3 ranges), carbonate hardness, general hardness, ammonium/ammonia, nitrite, nitrate, phosphate, iron, copper, silicate, oxygen, and, with the help of a table, the $CO_2$ calculation
- Add the reagents to the water samples, compare on the colour chart, read off the values and check the analysis sheet to see which actions are recommended, if any
- Comparator system takes the inherent water colouring into account. $CO_2$-content is determined by pH value and KH value using the table
- Contains a childproof reagent bottle in a waterproof plastic case. Refill reagents are separately available
- Package contents: 1 test case, incl. 13 tests, 12 glass vials, 1 special potassium cuvette, 2 syringes, 3 measuring spoons, thermometer, comparator block, 2 plastic cuvettes, colour charts, $CO_2$ table, pen, report sheets, operating instructions

## JBL PROAQUATEST LAB PROSCAPE

**Test case for a complete water analysis in plant aquariums**


- Monitors the water values in aquariums simply and reliably. Determines: pH value, carbonate hardness, $CO_2$ direct, iron, magnesium freshwater, potassium, phosphate, silicate and nitrate
- Add the reagents to the water samples, compare on the colour chart, read off the values and check the analysis sheet to see which actions are recommended, if any
- Comparator system takes the inherent water colouring into account (compensating it)
- Contains a childproof reagent bottle in a waterproof plastic case. Refill reagents are separately available
- Package contents: 1 test case incl. 22 reagents, 12 glass vials, 1 special potassium cuvette, 2 syringes, 3 measuring spoons, thermometer, comparator block, 2 plastic cuvettes, colour charts, pen, report sheets, operating instructions

## JBL PROAQUATEST LAB Marin

**Professional test case for exact marine water analysis**


- Monitors the water values in marine aquariums simply and reliably. Determines: pH value, carbonate hardness, calcium, magnesium, copper, ammonium, nitrite, nitrate, phosphate, silicate, oxygen
- Easy to use: add water to cuvette, add indicator, compare on scale / count drops until colour changes
- Comparator system takes the inherent water colouring into account. Incl. water analysis report sheets & pen
- Childproof reagent bottles, waterproof plastic case, refill reagents separately available
- Package contents: 1 test case, incl. 29 reagents, 12 glass vials, 2 plastic cuvettes, 2 syringes, 3 measuring spoons, thermometer, pen, report sheets and analysis sheet, laboratory comparator system & detailed instruction for use

## JBL PROAQUATEST COMBISET Marin

**Test case for the most important water values in marine aquariums**


- 6 Water tests to simply and accurately determine the most important water values in marine water, especially designed for fish aquariums
- Easy to use: add colour indicator and compare on colour chart, or count drops until colour changes
- Contains test for carbonate hardness, pH value, ammonium/ammonia, nitrite, nitrate and phosphate
- Childproof reagent bottles, waterproof plastic case, refill reagents separately available
- Contains: waterproof plastic case, 11 reagents, comparator block, 3 cuvettes, syringe, measuring spoons, colour charts, report sheets and instructions

## JBL PROAQUATEST COMBISET POND

**Test case for water analyses in koi and garden ponds**


- Simple and professional monitoring of the 6 most important water values in garden ponds, spring, tap and well water
- Take a water sample, add the indicator drop-wise, compare the resulting colour on the colour chart and read off the values
- With: pH test for the acidity, KH for the stability, GH for the mineral content, ammonium test for the fish's health, nitrite test for the toxic nitrogen and phosphate test for the algae nutrient content
- Comparator system for easy and precise reading and for taking any inherent water colouring into account
- Complete, incl. water-proof case, colour charts, glass vials, syringe, dosing spoon, comparator block and test reagents

## JBL PROAQUATEST LAB Koi

**Professional test case for water analyses in koi and garden ponds**


- Monitors the water values in ponds simply and reliably - determines pH 3.0 - 10, pH 7.4 - 9, carbonate hardness, general hardness, phosphate sensitive (low values), phosphate koi (high values), nitrite, nitrate, ammonium/ammonia, oxygen
- Easy to use: syringe accurately measures the amount of water, detailed instructions. Comparator system takes the inherent water colouring into account and makes colour comparison more precise
- With a professional ammonium test, the result of which shows the resulting ammonia content via a table (depending on the pH value)
- Childproof reagent bottles, waterproof plastic case, refillable kit
- Package contents: test case, incl. 22 reagents, glass vials, syringes, measuring spoons, thermometer, comparator block, plastic cuvettes, colour charts, pen, report sheets and operating instructions

## JBL PROAQUATEST EASY 7in1

**Test strips for quick aquarium water testing**


- Test strips for testing 7 important water values in 1 minute: quick test for general guidance when testing aquarium, pond, well and tap water
- Easy to use: Move the test strip in the water for 2-3 seconds. Remove the test strip. Let the water drain off sideways. Compare the test strip with the colour scale on the packaging after 1 minute. Read off the $CO_2$ value in the table
- Determines the following water values: chlorine, acidity (pH), general hardness (GH), toxic nitrite compound ($NO_2$), cause of algae ($NO_3$), pH stability (KH) and main plant nutrient ($CO_2$ content using the table)
- Further tests for phosphate or ammonium/ammonia etc. are available as individual tests in the JBL program
- Package contents: test strips EasyTest 7 in 1 on colour scale and $CO_2$ table. Contents: 50 test strips


# Overview JBL PROAQUATEST

## JBL PROAQUATEST pH 3.0-10.0

Quick test to determine the acidity in ponds and freshwater/marine aquariums

| | |
|---|---|
| For 50 Tests | **Art.-no. 2410100** |
| Refill | **Art.-no. 2410200** |

## JBL PROAQUATEST pH 6.0-7.6

Quick test to determine the pH values in the range 6.0-7.6 in freshwater aquariums

| | |
|---|---|
| For 80 Tests | **Art.-no. 2410300** |
| Refill | **Art.-no. 2410400** |

## JBL PROAQUATEST pH 7.4-9.0

Quick test to determine the pH values in the range 7.4-9.0 in ponds, freshwater and marine aquariums

| | |
|---|---|
| For 80 Tests | **Art.-no. 2410500** |
| Refill | **Art.-no. 2410600** |

## JBL PROAQUATEST GH General hardness

Quick test to determine the general hardness in freshwater aquariums & ponds

| | |
|---|---|
| Set | **Art.-no. 2410800** |
| Refill | **Art.-no. 2410900** |

## JBL PROAQUATEST KH Carbonate hardness

Quick test to determine the carbonate hardness (KH) in freshwater/marine aquariums and ponds

| | |
|---|---|
| Set | **Art.-no. 2411000** |
| Refill | **Art.-no. 2411100** |

## JBL PROAQUATEST POND Check pH/KH

Quick test to determine the acidity and pH stability in garden ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2407400** |

## JBL PROAQUATEST $O_2$ Oxygen

Quick test to determine the oxygen content in freshwater/marine aquariums and ponds

| | |
|---|---|
| For 40 Tests | **Art.-no. 2411200** |
| Refill | **Art.-no. 2411300** |

## JBL PROAQUATEST Cu Copper

Quick test to determine the copper content in fresh and marine water aquariums and ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2411400** |
| Refill | **Art.-no. 2411500** |

## JBL PROAQUATEST Fe Iron

Quick test to determine the iron content in fresh and marine water aquariums and ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2411600** |
| Refill | **Art.-no. 2411700** |

## JBL PROAQUATEST $SiO_2$ Silicate

Quick test to determine the silicate content in freshwater & marine aquariums

| | |
|---|---|
| For 50 Tests | **Art.-no. 2411800** |
| Refill | **Art.-no. 2411900** |

## JBL PROAQUATEST $NH_4$ Ammonium

Quick test to determine ammonium/ammonia content in freshwater/marine water aquariums and in ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2412100** |
| Refill | **Art.-no. 2412200** |

## JBL PROAQUATEST $NO_2$ Nitrite

Quick test to determine the nitrite content in freshwater/marine aquariums & ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2412300** |
| Refill | **Art.-no. 2412400** |

## JBL PROAQUATEST $NO_3$ Nitrate

Quick test to determine the nitrate content in freshwater/marine aquariums and ponds

| | |
|---|---|
| For 40 Tests | **Art.-no. 2412500** |
| Refill | **Art.-no. 2412600** |

## JBL PROAQUATEST $PO_4$ Phosphate Sensitiv

Quick test to determine the phosphate content in fresh and marine water aquariums and ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2412700** |
| Refill | **Art.-no. 2412800** |

## JBL PROAQUATEST $PO_4$ Phosphate Koi

Quick test to determine the phosphate content in garden and koi ponds

| | |
|---|---|
| For 50 Tests | **Art.-no. 2417600** |

## JBL PROAQUATEST K Potassium

Quick test to determine the potassium content in freshwater aquariums

| | |
|---|---|
| For 25 Tests | **Art.-no. 2413000** |
| Refill | **Art.-no. 2413100** |

# Overview JBL PROAQUATEST


## JBL PROAQUATEST Ca Calcium

Quick test to determine the calcium content in marine aquariums

| | |
|---|---|
| Set | **Art.-no. 2413200** |
| Refill | **Art.-no. 2413300** |


## JBL PROAQUATEST Mg-Ca Magnesium-Calcium

Quick test for to determine the magnesium/calcium in marine aquariums

| | |
|---|---|
| Set | **Art.-no. 2413600** |
| Refill | **Art.-no. 2413700** |


## JBL PROAQUATEST Mg Magnesium Fresh water

Quick test to determine the magnesium content in freshwater aquariums

| | |
|---|---|
| For 60 Tests | **Art.-no. 2414200** |
| Refill | **Art.-no. 2414300** |


## JBL PROAQUATEST $CO_2$-pH Permanent

Permanent test to determine the acid/carbon dioxide content in freshwater aquariums

| | |
|---|---|
| For 9-12 Mon. | **Art.-no. 2413800** |
| Refill | **Art.-no. 2413900** |


## JBL PROAQUATEST $CO_2$ Direct

Quick test to determine the carbon dioxide content (main nutrient for plants) in freshwater aquariums

| | |
|---|---|
| Set | **Art.-no. 2414000** |
| Refill | **Art.-no. 2414100** |


## JBL PROAQUATEST EASY 7in1

Test strips for quick aquarium water testing

| | |
|---|---|
| 50 Tests | **Art.-no. 2414400** |


## JBL PROAQUATEST COMBISET Plus Fe

Test case with the most important water tests in freshwater aquarium, incl. iron test

| | |
|---|---|
| 6 Tests | **Art.-no. 2409200** |


## JBL PROAQUATEST COMBISET Plus $NH_4$

Test case with the most important water tests for freshwater aquariums, incl. ammonium test

| | |
|---|---|
| 6 Tests | **Art.-no. 2409000** |


## JBL PROAQUATEST LAB

Test case for the analysis of tap water and freshwater aquariums

| | |
|---|---|
| 14 Tests | **Art.-no. 2408400** |


## JBL PROAQUATEST LAB PROSCAPE

Test case for a complete water analysis in plant aquariums

| | |
|---|---|
| 9 Tests | **Art.-no. 2408300** |


## JBL PROAQUATEST LAB Marin

Professional test case for exact marine water analysis

| | |
|---|---|
| 11 Tests | **Art.-no. 2408200** |


## JBL PROAQUATEST COMBISET Marin

Test case for the most important water values in marine aquariums

| | |
|---|---|
| 6 Tests | **Art.-no. 2408100** |


## JBL PROAQUATEST COMBISET POND

Test case for water analyses in koi and garden ponds

| | |
|---|---|
| 6 Tests | **Art.-no. 2407000** |


## JBL Testlab Koi

Professional test case for water analyses in koi and garden ponds

| | |
|---|---|
| 10 Tests | **Art.-no. 2802000** |

# PRO AQUATEST® JBL

KH | GH | Ca | Mg | Mg (Fresh water) | pH (3-10) | pH (6.0 - 7.6) | pH (7.4 - 9.0) | $NH_4$ | $NO_2$ | $NO_3$

$PO_4$ (Sensitive) | $PO_4$ (Koi) | $SiO_2$ | Fe | K | Cu | $O_2$ | $CO_2$ (Direct)

# WASSERANALYSE
# WATER ANALYSIS
# ANALYSE DE L'EAU

VORSPRUNG DURCH FORSCHUNG

| | | Empfohlene Werte / Recommended Values / Paramètres recommandés | | | | | Messung / Measurement / Mesure | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Süßwasser Gesellschafts-aquarium<br>Freshwater Community tank<br>Eau douce Aquarium communautaire | Süßwasser Aquascaping<br>Freshwater Aquascaping<br>Eau douce Aquascaping | Gartenteich<br>Garden pond<br>Bassin de jardin | Meerwasser Fischbecken<br>Marine water Fish tank<br>Eau de mer Bac à poissons | Meerwasser Riff<br>Marine water Reef<br>Eau de mer Récif | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | t (°C) | 21-28 | 23-26 | 4-30 | 24-28 | 24-26 | | | | | | | | | | | | | | |
| Basismessung Base measurements Mesure de base | KH (°dKH) | 5-16 | 4-10 | 5-20 | 7-10 | 7-13 | | | | | | | | | | | | | | |
| | pH | 6,8-8,2 | 6,4-7,2 | 7,5-8,5 | 7,8-8,4 | 7,8-8,4 | | | | | | | | | | | | | | |
| | GH (°dGH) | 8-25 | 6-15 | 8-30 | - | - | | | | | | | | | | | | | | |
| Optionale Messungen bei Problemen / Optinal measurements for problems Mesure optionnelle en cas de problèmes | Fischsterben / Fish dying Mortalité des poissons: $NH_4$ (mg/l) | <0,1 | <0,1 | <0,1 | <0,05 | <0,05 | | | | | | | | | | | | | | |
| | $NO_2$ (mg/l) | <0,1 | <0,1 | <0,1 | <0,1 | <0,05 | | | | | | | | | | | | | | |
| | Cu (mg/l) | <0,05 | <0,05 | <0,05 | <0,05 | <0,05 | | | | | | | | | | | | | | |
| | $O_2$ (mg/l) | 6-10 | 6-10 | 6-13 | 6-10 | 6-10 | | | | | | | | | | | | | | |
| | Algen- u. Pflanzenwuchs / Algae and plant growth Algues et croissance des plantes: Leitwert / Conductance / Conductivité | 300-900 µS/cm | 250-600 µS/cm | 300-1200 µS/cm | 48-52 mS/cm | 48-52 mS/cm | | | | | | | | | | | | | | |
| | $NO_3$ (mg/l) | 1-30 | 5-20 | <5 | 1-10 | <5 | | | | | | | | | | | | | | |
| | $PO_4$ (mg/l) | <0,4 | 0,5-1,8 | < 0,1 | 0,02-0,1 | 0,02-0,1 | | | | | | | | | | | | | | |
| | $SiO_2$ (mg/l) | <1,2 | <0,4 | - | <0,4 | <0,4 | | | | | | | | | | | | | | |
| | Fe (mg/l) | 0,05-0,4 | 0,1-0,6 | <0,2 | < 0,05 | < 0,05 | | | | | | | | | | | | | | |
| | K (mg/l) | 10-30 | 10-30 | - | 380-400 | 380-420 | | | | | | | | | | | | | | |
| | Mg (mg/l) | 5-10 | 5-10 | - | - | - | | | | | | | | | | | | | | |
| | $CO_2$ (mg/l) | 15-30 | 20-35 | - | - | - | | | | | | | | | | | | | | |
| Nur bei Meerwasser Only in marine tanks Uniquement en eau de mer | Ca (mg/l) | - | - | - | 400-440 | 420-480 | | | | | | | | | | | | | | |
| | Mg (mg/l) | - | - | - | 1200-1350 | 1350-1400 | | | | | | | | | | | | | | |
| | Dichte / Conductivité / Densité (25°C kg/l) | - | - | - | 1,022-1,026 | 1,022-1,026 | | | | | | | | | | | | | | |
| | Salinität / Salinity / Salinité (ppt) | - | - | - | 30-35 | 30-35 | | | | | | | | | | | | | | |

# PRO AQUATEST® JBL

## WASSERANALYSE
## WATER ANALYSIS
## ANALYSE DE L'EAU


| | ⑤ Wert erhöhen / Increasing value / Augmenter le taux | | | ⑤ Wert verringern / Decreasing value / Diminuer le taux | | |
|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| t (°C) | JBL ProTemp | ❹ | JBL ProTemp | ❶, JBL Cooler | ❶ | ❶, JBL Cooler |
| KH (°dKH) | JBL AquaDur | JBL StabiloPond | JBL CalciuMarin | ❸, JBL pH-Minus | ❹ | ❷ |
| pH | JBL AquaDur, JBL pH-Plus, $CO_2$ ▼ | JBL StabiloPond | JBL CalciuMarin, JBL pH-Plus | JBL pH-Minus, $CO_2$ ▲ | JBL StabiloPond | KH 7-13° dKH |
| GH (°dGH) | JBL AquaDur | JBL StabiloPond | ❹ | ❸ | ❹ | ❹ |
| $NH_4$ (mg/l) | ❹ | ❹ | ❹ | JBL FilterStart, JBL Denitrol | JBL BactoPond, JBL StabiloPond | ❷ |
| $NO_2$ (mg/l) | ❹ | ❹ | ❹ | ❷, JBL FilterStart, JBL ProClean Bac | JBL BactoPond, JBL PondOxi Set | ❷, JBL FilterStart, JBL ProClean Bac |
| Cu (mg/l) | JBL Oodinol (❻) | ❹ | JBL Oodinol (❻) | ❷, JBL Biotopol | ❷, JBL BiotoPond | ❷ ➡ Cu=0,0 |
| $O_2$ (mg/l) | JBL ProSilent | ❶, JBL PondOxi Set | ❶, JBL ProSilent | ❹ | ❹ | ❹ |
| Leitwert / Conductance / Conductivité | JBL AquaDur | JBL StabiloPond | Meersalz | ❸ | ❹ | ❷ |
| $NO_3$ (mg/l) | ❹, JBL ProScape | ❹ | ❹ | ❷, JBL BioNitratEx | ❷ | JBL BioNitratEx+ JBL Carbomec Activ |
| $PO_4$ (mg/l) | ❹, JBL ProScape | ❹ | ❹ | ❷, JBL PhosEx | ❷, JBL PhosEx Pond | ❷, JBL PhosEx |
| $SiO_2$ (mg/l) | ❹ | ❹ | ❹ | JBL SilicatEx | ❹ | JBL SilicatEx |
| Fe (mg/l) | JBL Ferropol, JBL ProScape | JBL FloraPond | JBL Trace Marin | ❷, JBL Biotopol | ❷ | ❷ |
| K (mg/l) | JBL Ferropol, JBL ProScape | JBL StabiloPond | ❹ | ❸ | ❹ | ❷ |
| Mg (mg/l) | JBL AquaDur | JBL StabiloPond | JBL MagnesiuMarin | ❸ | ❹ | ❷ |
| $CO_2$ (mg/l) | JBL ProFlora $CO_2$ | ❷ | JBL ProFlora $CO_2$ | ❶, JBL ProSilent | ❹ | ❶, JBL ProSilent |
| Ca (mg/l) | JBL AquaDur | JBL StabiloPond | JBL CalciuMarin | ❸ | ❹ | ❷ |

de
- ❶ mehr Wasserbewegung
- ❷ Teilwasserwechsel
- ❸ Teilwasserwechsel mit Umkehrosmosewasser
- ❹ Nicht notwendig
- ❺ Messwert liegt unter/ über den empfohlenen Wert
- ❻ nur bei Krankheit

en
- ❶ more water movement
- ❷ partial water change
- ❸ partial water change with reverse osmosis water
- ❹ not required
- ❺ Measured value is below/above the recommended value
- ❻ only in case of illness

fr
- ❶ Mouvement d'eau plus fort
- ❷ Changement d'eau partiel
- ❸ Changement d'eau partiel avec eau osmosée
- ❹ Non nécessaire
- ❺ Taux mesuré inférieur/supérieur au taux recommandé
- ❻ Uniquement en cas de maladie

## $CO_2$

Tabelle · Table · Tableau

| | KH 2 | KH 4 | KH 6 | KH 8 | KH 10 | KH 12 | KH 14 | KH 16 | KH 18 | KH 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| pH 7,8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 9 | 10 |
| pH 7,6 | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | 15 |
| pH 7,4 | 2 | 5 | 7 | 10 | 12 | 14 | 17 | 19 | 21 | 24 |
| pH 7,3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| pH 7,2 | 4 | 8 | 11 | 15 | 19 | 23 | 27 | 30 | 34 | 38 |
| pH 7,1 | 5 | 10 | 14 | 19 | 24 | 29 | 33 | 38 | 43 | 48 |
| pH 7 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| pH 6,9 | 8 | 15 | 23 | 30 | 38 | 45 | 53 | 60 | 68 | 76 |
| pH 6,8 | 10 | 19 | 29 | 38 | 48 | 57 | 67 | 76 | 86 | 95 |
| pH 6,7 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | | |
| pH 6,6 | 15 | 30 | 45 | 60 | 75 | 90 | | | | |
| pH 6,4 | 24 | 48 | 72 | 96 | | | | | | |
| pH 6,2 | 38 | 76 | | | | | | | | |

de
- Empfohlener Bereich
- Gesellschaftsaquarium
- JBL ProScape

en
- Recommended range
- Community tank
- JBL ProScape

fr
- Plage recommandée
- Aquarium communautaire
- JBL ProScape

VORSPRUNG DURCH FORSCHUNG

www.JBL.de

# JBL Expeditions: Water analysis worldwide

## Sri Lanka & Maldives

**JBL Expedition 2002**

**Sri Lanka** Freshwater biotopes

| | Attanagalu Oya | Puwakpitiya Oya | Aberdeen Falls | Black River | Hatton Oya |
|---|---|---|---|---|---|
| Time/Temp. (°C) | 12:30/28,7 | | 09:00/23 | | 15:00/23 |
| pH | 6,05 | 6,45 | 7,4 | 6,05 | 7,4 |
| GH (°dGH) | 0 | 3 | 3 | | 0 |
| KH (°dKH) | 3 | 0 | 2 | | 0 |
| $O_2$ (mg/l) | | | >10 | | 6 |
| Fe (mg/l) | 0,6 | 0,1 | 0,75 | | 0,7 |
| Cond. (µS/cm) | | 20 | 75 | | 50 |

**Maya Tila/Maldives** Salt water

| Depth | 5 m | 10 m | 15 m | 20 m | 25 m |
|---|---|---|---|---|---|
| Temp. (°C) | 28,2 | 28 | 28 | 27,8 | 28 |
| pH | 8,2 | 8,2 | 8,5 | 8,1 | 8,2 |
| KH (°dKH) | 8 | 8 | 8 | 8 | 8 |
| Ca (mg/l) | 380 | 440 | 360 | 480 | 460 |
| Mg (mg/l) | 1220 | 1060 | 1240 | 1320 | 1160 |
| $O_2$ (mg/l) | 7 | 7 | 7 | 7 | 7 |

## French Guyana & Caribbean

**JBL Expedition 2004**

**Caribbean** Salt water

| | Saba | Sint Eustatius (Statia) |
|---|---|---|
| Temp. (°C) | 29,4 | 28 |
| pH | 8,2 | 8,2 |
| KH (°dKH) | 10 | 9 |
| Ca (mg/l) | 460 | 440 |
| Mg (mg/l) | 1240 | 1360 |
| Cond. (mS/cm) | 53,4 | |

**French Guyana** Freshwater biotopes

| | Crique Gabrielle | Crique Bagot | Pain de sucre |
|---|---|---|---|
| Temp. (°C) | 27 | 25,5 | 23,9 |
| pH | 6,3 | 6,5 | 5,5 |
| GH (°dGH) | 0 | 0 | 1 |
| KH (°dKH) | 2 | 0 | 3 |
| Fe (mg/l) | 0,6 | 0,3 | 0,2 |
| Cond. (µS/cm) | 31 | 23 | 22 |

## Red Sea, Egypt

**JBL Expedition 2005**

**Marsa Shagra/Red Sea** Salt water

| | Inner reef | Outer Reef | Dolphinhouse |
|---|---|---|---|
| Temp. (°C) | 25,3 | 24,8 | 24,7 |
| pH | 8,10 | 8,17 | 8,13 |
| KH (°dKH) | 8 | 8 | 8 |
| Ca (mg/l) | 448 | 467 | 457 |
| Mg (mg/l) | 1360 | 1281 | 1277 |
| $O_2$ (mg/l) | 8 | 8 | 8 |

## Negros, Philippines

**JBL Expedition 2007**

**Apo Island/Philippines** Salt water

| Depth | 0 m | 3 m | 10 m | 20 m | 30 m |
|---|---|---|---|---|---|
| Temp. (°C) | 29 | 29 | 26 | 25 | 24 |
| pH | 8.35/8.2 | 8.29/8.2 | 8.30/8.2 | 8.25/8.2 | 8.22/8.2 |
| KH (°dKH) | 7 | 7 | 7 | 7 | 7 |
| Ca (mg/l) | 400 | 400 | 400 | 410 | 420 |
| Mg (mg/l) | 1500 | 1500 | 1500 | 1700 | 1800 |
| $O_2$ (mg/l) | 5.0/5.0 | 5.2/6.0 | 5.2/5.0 | 5.0/5.0 | 5.0/4.5 |
| Cond. (mS/cm) | 49.3 | 49.2 | 49.5 | 49.6 | 49.7 |

**Philippines** Freshwater

| | Negros |
|---|---|
| Temp. (°C) | 25 |
| pH | 7,5 |
| GH (°dGH) | 4 |
| KH (°dKH) | 2 |
| $NO_3$ (mg/l) | 0 |
| $PO_4$ (mg/l)) | 0 |

## Amazonia – Pantanal

JBL Expedition 2009

**Amazonia** Freshwater biotopes

| | Rio Negro Barcelos | Rio Branco | Rio Jauaperi | Cayman Lake | Rio Negro Manaus | Rio Negro-Solimoes | Solimoes | Piranha lake Nobres |
|---|---|---|---|---|---|---|---|---|
| Type of water | black | white | clear | clear | black | mixed | white | clear |
| Temp. (°C) | 30,3 | 30 | 26,3 | 27,8 | 28,9 | 28 | 27,9 | 28,9 |
| pH | 4,5 | 6,5 | 4,5 | 6,01 | 5,16 | 5,5 | 6,5 | 7,31 |
| KH (°dKH) | 0 | 0 | 0 | 0 | 0 | 1,5 | 2 | 11 |
| $O_2$ (mg/l) | 72,4 | 60 | | | 33 | | 49 | 41 |
| Cond. (µS/cm) | 16 | 19 | 8 | 12 | 10 | | 83 | 388 |

## Tanzania, Zanzibar, Lake Tanganyika

JBL Expedition 2010

**Zanzibar** Salt water

| | Zanzibar | Nungwi |
|---|---|---|
| Temp. (°C) | 29 | 29,3 |
| pH | 8,2 | 8,3 |
| KH (°dKH) | 6 | 8 |
| Ca (mg/l) | 380 | 420 |
| Mg (mg/l) | 1300 | 1180 |
| Cond. (mS/cm) | 51,7 | 51,6 |

**Kigoma/ Lake Tanganyika** Freshwater

| Depth | 0 m | 10 m | 20 m |
|---|---|---|---|
| Temp. (°C) | 29,3 | 29 | 26 |
| pH | 8,9 | 8,8 | >9 |
| GH (°dGH) | 10 | 11 | 11 |
| KH (°dKH) | 18 | 17 | 16 |
| $O_2$ (mg/l) | 8 | 8 | 8 |
| Cond. (µS/cm) | 644 | 690 | |

## Central America & Galapagos

JBL Expedition 2012

**Caribbean** Salt water

| | Playa del Carmen | Bartolomé Island |
|---|---|---|
| Temp. (°C) | 26 | 27 |
| pH | 8,1 | 7,8/8,5 |
| KH (°dKH) | 9 | 6 |
| Ca (mg/l) | 500 | 360 |
| Mg (mg/l) | 1100 | 1140 |
| Cond. (mS/cm) | 53,5 | 47,6 |

**Central America** Freshwater

| | Ponderosa Cenote | Grande Cenote | Nicaragua Lake | Rio Papaturro | Chira/ Mangroven |
|---|---|---|---|---|---|
| Temp. (°C) | 25,4 | 25,5 | 28 | 25,8 | 29,2 |
| pH | 6,97 | 7,4 | 8,48 | 6,92 | 7,8 |
| KH (°dKH) | 0-1 | 17 | 4 | 3 | 7 |
| GH (°dGH) | | 30 | 4 | 4 | |
| Fe (mg/l) | <0,02 | <0,02 | <0,02 | 1 | |
| Cond. (µS/cm) | 8,18 | 3500 | 219 | 127 | 46,7 |

## Vietnam

JBL Expedition 2013

**Na Thrang** Salt water

| | Hon Mun West | Hon Mun North |
|---|---|---|
| Temp. (°C) | 28,8 | 29,6 |
| pH | 8,2 | 8 |
| KH (°dKH) | 8 | 6 |
| Ca (mg/l) | 420 | 440 |
| Mg (mg/l) | 1400 | 1440 |
| Cond. (mS/cm) | 50,8 | 50,8 |

**Na Thrang** Freshwater biotopes

| | Hon Ba Region | Ba Ho River | Ba Ho Lower waterfall | Ba Ho Middle waterfall | Ba Ho Upper waterfall |
|---|---|---|---|---|---|
| Temp. (°C) | 28 | 28-29 | 28,7 | 28,5 | 29,5 |
| pH | 6,4 | 6,6-6,7 | 7,2 | 6,8 | 7,8 |
| KH (°dKH) | 0 | 1 | 1 | 4 | 7 |
| GH (°dGH) | 0 | 0 | 1 | 0 | 9 |
| Fe | 0,03 | 0,3 | 0,05 | 0,05 | 0,05 |
| Cond. (µS/cm) | 37 | 53 | 136 | | 84 |

## California, South Seas & Australia

JBL Expedition 2015

**California, South Seas, Australia** Salt water

| | Catalina Island | Moorea | Great Barrier Reef |
|---|---|---|---|
| Temp. (°C) | 22 | 26 | 27 |
| pH | 8 | 7,6 | 8,0 - 8,2 |
| KH (°dKH) | 9 | 7 | 5 |
| Ca (mg/l) | 360 | 380 | 400 |
| Mg (mg/l) | 1084 | 1160 | 1160 |
| Dichte | 1,0235 | 1,0235 | 1,0243 |

**Australia** Freshwater biotopes

| | Ormiston Gorge | Kathleen Springs | Babinda Creek |
|---|---|---|---|
| Temp. (°C) | 25 | 24 | 24 |
| pH | < 2 | > 15 | < 2 |
| KH (°dKH) | 6 | 5 | 2 |
| GH (°dGH) | 3 | 6 | 2 |
| $O_2$ (mg/l) | 6 | 6 | 6 |
| Cond. (µS/cm) | 343 | 539 | 44 |

## Venezuela

JBL Expedition 2016

| | Orinoco | | | | | | | | Canaima |
|---|---|---|---|---|---|---|---|---|---|
| | Hauna= Waterlilies Camp | River bank | Eco-Camp | River bank | Narrow river | River bank | River bank | Cow pond | Lagoon |
| Temp. (°C) | 27,8 | 28 | 29 | 27 | 28,3 | 28,4 | 28,6 | 33 | 28 |
| pH | 4,5 | | 6 | 6,2 | | 6 | 6 | 7,2 | 5 |
| KH (°dKH) | 0 | 2 | < 1 | 2 | 2 | 2,0 | 2 | 8 | 0 |
| GH (°dGH) | 28 | 21 | < 1 | 2 | 2 | 0,25 | 0,25 | < 3 | 0 |
| $O_2$ (mg/l) | 8 | | 10 | 6 | | 8-10 | 10 | | 8 |
| Cond. (µS/cm) | | | 67 | 97 | 71 | 75 | 77 | 386 | 9 |

## Madagascar, Mauritius, Seychelles

JBL Expedition 2018

**Salt water**

| | Madagaskar Nosy Be | Mauritius | Seychellen La Digue |
|---|---|---|---|
| Temp. (°C) | 30,7 | 27,7 | 30 |
| pH | 8,2 | 8,2 | 8,3 |
| KH (°dKH) | 8 | 8 | 9 |
| Ca (mg/l) | 460 | 460 | 380 |
| Mg (mg/l) | 1340 | 1220 | 1400 |
| Cond. (mS/cm) | 53,1 | 53,7 | 53,9 |

**Brackish water**

| | Seychellen La Digue |
|---|---|
| Temp. (°C) | 30 |
| pH | 8 |
| KH (°dKH) | 6,5 |
| Ca (mg/l) | 400 |
| Mg (mg/l) | 1400 |
| Cond. (µS/cm) | 38 |

**Freshwater**

| | Madagaskar Matsinjo |
|---|---|
| Temp. (°C) | 20 |
| pH | 6,5 |
| KH (°dKH) | 0 |
| GH (°dGH) | 0 |
| Fe (mg/l) | 0,1 |
| Cond. (µS/cm) | 19 |

## Japan

JBL Expedition 2019

**Niigata/Ojiya – Koi Ponds** Freshwater

| | Yamamatsu Koi Farm | Yamasan Mud Pond | Kaneko Indoor Pond |
|---|---|---|---|
| Temp. (°C) | 18,1 | 19,8 | - |
| pH | 7 | 8,2 | 7,4 |
| KH (°dKH) | 2 | 1 | 5 |
| GH (°dGH) | 2 | 1 | 15 |
| Cond. (µS/cm) | 151 | 92 | 922 |

**Iriomote/Ryukyu-Islands** Freshwater

| | Ku-Ra Waterfall | Modama Mini Lake | Urauchi River |
|---|---|---|---|
| Temp. (°C) | 24,3 | 22,2 | 23,5 |
| pH | 7 | 8,2 | 7,8 |
| KH (°dKH) | 2 | 2 | 1,5 |
| GH (°dGH) | 2 | 2 | 1,5 |
| Cond. (µS/cm) | 175 | 156 | 102 |

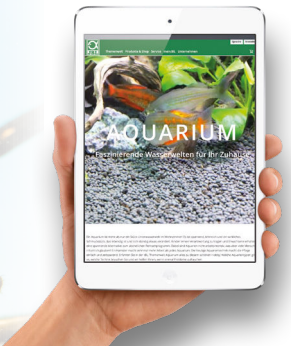
**Ryukyu-Islands** Salt water

| | Ishigaki |
|---|---|
| Temp. (°C) | 26,6 |
| pH | 8,2 |
| KH (°dKH) | 5,5 |
| Ca (mg/l) | 440 |
| Mg (mg/l) | 1360 |
| Cond. (mS/cm) | 50,7 |

# JBL

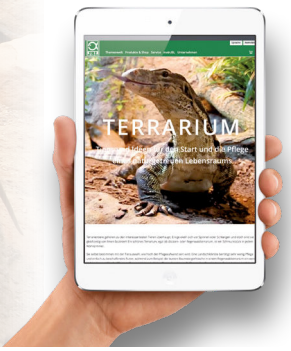
## Explore the world of JBL

### JBL THEMEWORLD AQUARIUM




www.jbl.de/qr/100390

### JBL THEMEWORLD TERRARIUM




www.jbl.de/qr/100392

### JBL TTHEMEWORLD POND


www.jbl.de/qr/100391

**www.jbl.de**
**facebook.jbl.de**
**instagram.jbl.de**

4 014162 067456
9789910 V02

22
PAP

**VORSPRUNG DURCH FORSCHUNG**
AHEAD THROUGH RESEARCH

JBL