



Water values and water chemistry

Discus fish caught in the wild feel most comfortable in water which most closely resembles the water in its original Amazonian habitat. There the water is very soft (overall hardness: 0-3, carbonate hardness 0-3, the pH value is very low 4-8) and the conductance value is also very low (100-400 µS).

Our discus fish, however, have been used to harder water (tap water) for generations. **The values for the water in our system are as follows: overall hardness 15, carbonate hardness 8, pH value 7, conductance value 800 µS, with a water temperature between 29°- 30°C.**

The main water parameters for our discus fish lie within the following tolerance range: hardness 0-30, carbonate hardness 0-25, pH value 4.0-8.3; electrical conductance 150-1200 µS. Water temperature briefly between 25-35 °C.

This means our discus fish are suitable for over 95 % of all types of tap water in Europe.

Water chemistry

You can change the chemical composition of water slightly by various means, e.g. you can make practically distilled water from tap water using a reverse osmosis system or demineralisation system. This means that you remove 99% of the water hardness and reduce the conductance value significantly to c. 50 µS. You can then mix this water with tap water until you have the required water values. This enables you to mix suitable water for discus fish caught in the wild or for discus fish intended for breeding.

How do water values change through feeding aquarium fish?

Firstly, and this is the most important, we would like to point out that water values change very markedly and quickly in a small aquarium (nano tank or aquarium less than 150 litres). Water values in larger aquariums (180 - 1000 litres) change more slowly because of the larger volume of water; these aquariums are more suited for beginners for this very reason.

When you feed your fish, e.g. with our STENDKER discus feed, you will increase the phosphate content in your water which plants and algae use for growth. In addition, ammonium is created at a pH value below 7 and ammoniac at a pH value above 7. Both these substances are converted by the filter bacteria. They are first converted to nitrite and then to nitrate. Ammoniac and nitrite are toxins which accumulate in the blood of the fish and in high concentrations can lead to death.

An old filter, which still functions well and which has built up a healthy microbial culture, will always ensure that ammonium, ammoniac and nitrite are barely traceable. However, the phosphate and nitrate content will rise slowly and the pH value will drop as a result of microbial activity. This means the water must be changed regularly; the amount and frequency will depend directly on the amount of feed used and fish excrement.

For example, less fish = less food = less water to be changed.

For example, for an aquarium containing 180 litres with 12 discus fish (10 cm) 50 neons, 6 catfish and 4 dwarf cichlids, we recommend changing 1/3 of the water in the aquarium 1 x per week.

To analyse the water values given here you can use a dropper indicator kit or test strips which can be purchased at any pet shop. You should check these values regularly.



Dropper indicator kits and water values

Ammonium

Occurs at pH values less than 7 if the filter is not yet working properly. Reduce the amount of feed used to prevent this value from rising.

Ammoniac

Occurs at pH values above 7, is toxic and occurs if the filter is not yet working properly. Reduce the amount of feed used to prevent this value from rising.

Nitrite

Must be measured daily for a new aquarium until no more nitrite occurs when feeding normally. **After then you do not need to measure the nitrite concentration.**

You will only need to measure the nitrite again daily (for c. 1 week) if the filter performance drops due to cleaning or after failure of the filter to ensure that the filter reaches its original level of performance.

The behaviour of the fish will also tell you if the nitrite levels are very high. The fish will normally refuse their food and start to breathe heavily and fast. You should measure the nitrite concentration and if it is high, stop feeding and change 90 % of the water.

Nitrate

Measure three or four times per year before changing the water. If it is higher than 100 mg per litre we recommend changing the water more frequently to ensure healthier growth of your fish.

pH value

Measure 1 x per week. If the pH value drops from 7.5 to 6.0, for example, before the week is out, this means the water should be changed then, otherwise the pH value and hence the acid content in the water will drop very rapidly. At a pH value of 3.6 the acid is so strong it will kill the fish.

Phosphate

Only measure if algae increase rapidly. You can lower the phosphate content by changing the water more often or changing a greater volume of the water.

Overall hardness

If you mix tap water with osmosis water for keeping fish caught in the wild or breeding pairs, you should measure the water mixture **once**; the ideal value of overall hardness is between 1 and 4.

Carbonate hardness

If you mix tap water with osmosis water for keeping fish caught in the wild or breeding pairs, you should measure the water mixture **once**; the ideal value of carbonate hardness is between 1 and 2.