

Aquarium care according to nature

Water tests



Water conditioning



Filter maintenance



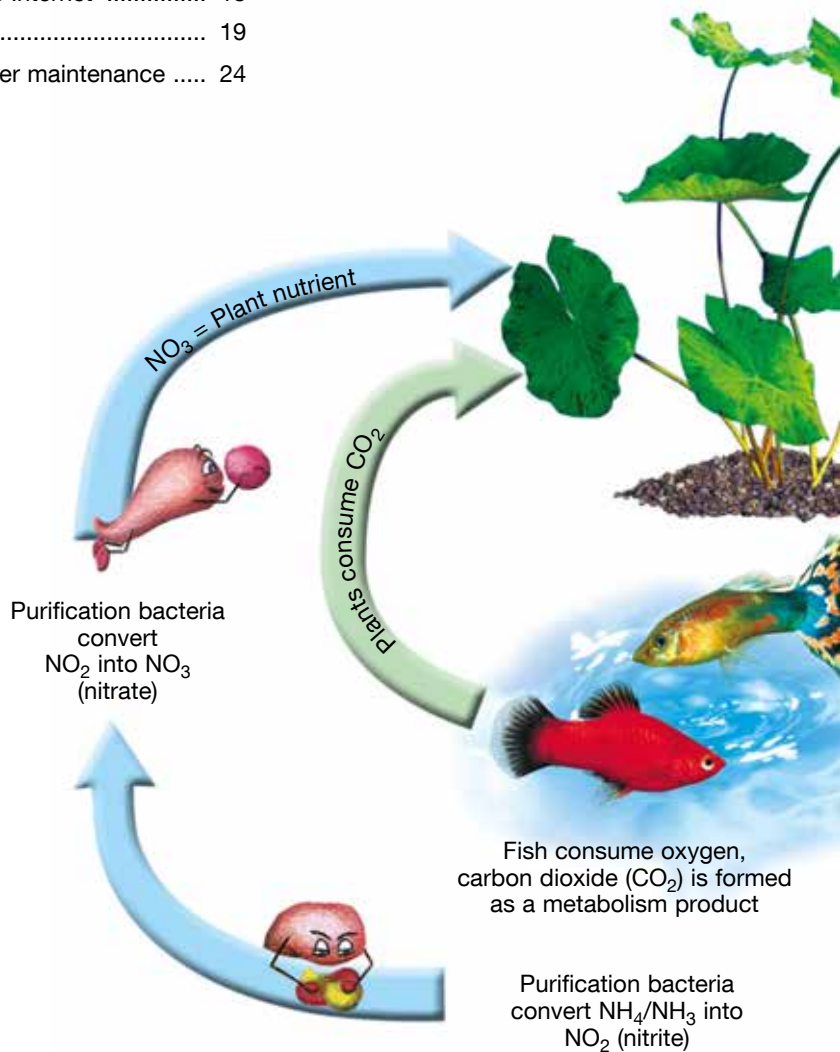
 **Sera® guide**

Professional advice for keeping an aquarium according to nature

Contents

Maintenance plan	4
sera water test kits as an early-warning system	10
Water check on the Internet	18
Water changes	19
Filter media and filter maintenance	24

The equilibrium of “forces” in an aquarium



In the natural habitats of our ornamental fish, nature ensures optimal living conditions. In an aquarium we need to support the biological cycle with some maintenance.

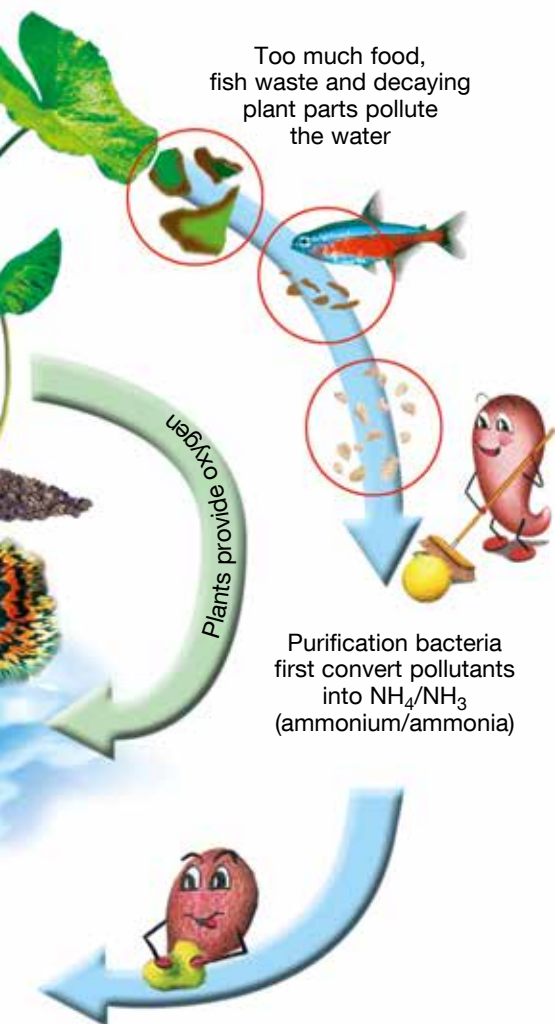
Aquariums according to nature with sera – and your fish will do fine!

When keeping an aquarium, it is quite important to create the aquatic environment for your fish as they know it from nature. You will set the basis for this when setting up the aquarium. The water properties are easy to adjust if fish from the same natural environment inhabit the aquarium. If you keep fish from entirely different origins together, these will sometimes have entirely different water requirements. This will make aquarium care much more difficult.

Fish, plants and decoration will blend in fine if, for example, you set up a section from the Amazon region underwater world or from Lake Malawi. The fish require the same water composition, according to the biotope. These preconditions plus support by the **sera** water conditioners make aquarium care considerably easier. The fish will do well and usually live longer than in nature. This makes living with an aquarium really enjoyable.

sera has put together community aquariums from 9 different biotopes. You will find information on them on the Internet (www.sera.de) and on **sera – The CD**, which includes great films and computer aided aquarium design. **sera – The CD** allows you to design functioning aquariums from the very beginning.

Using the **sera online laboratory** ensures that aquarium maintenance will require little efforts. You will easily learn how to use water test kits and water conditioners. Also, you can at any time monitor the quality of your aquarium water and will immediately receive suggestions for improvement. You will find further information on this on page 18.



Maintenance plan

Daily care

Switching the light on and off

The lighting period should be approximately 12 hours. This is roughly the length of a tropical day. In case of algae problems you can reduce the lighting period to 8 hours, e.g. by switching off the light for some hours around noon. You can regulate the lighting time with an automatic timer.

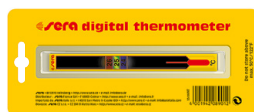
Filter control

Also check whether filter and/or aeration work properly. Clean the filter media (see page 24 ff.) in case considerably less water flows out of the filter. The filter outlet should be directed in a way that the water surface is only gently agitated. This reduces CO₂ losses, thus creates better growth conditions for the plants and therefore reduces algae growth



Temperature control

Modern aquarium heater thermostats work very reliably. Nevertheless it is recommended to have a look at the aquarium thermometer once a day so you can be sure everything is in order.



Water level control

Check the water level and replace evaporated water to make sure the surface skimmer remains in operation and the heater does not become dry due to too low water levels. Remove plant parts caught in the intake grid of an internal filter, or on the intake tube in case of an external filter, if the water flow is considerably affected.

Feeding

Feed your fish 2 – 3 times a day, but only as much as they will eat within short time. Feed nocturnal fish and bottom dwellers after dark. You will find more information on this on the Internet (www.sera.de) or in the **sera guide** "How to feed your tropical fish naturally".

Weekly care

Water changes

Weekly water changes are by far the most important maintenance measure to support the biological equilibrium, especially in small aquariums. In larger or less densely stocked aquariums, partial water changes every 2 or 3 weeks are sufficient. Good preparation provided, a water change will take 15 – 20 minutes, depending on the amount of changed water.

sera toxivec immediately detoxifies the water in case of suddenly deteriorating water quality (detailed information on page 7). You will find further information on how to change the water on page 19 ff.

Water test

You should check the most important water parameters once weekly.

You will find further information on water tests on page 10 ff.

Plant fertilization

Plants provide important functions in an aquarium:

- Supplying the fish with essential oxygen
- Biological pollutant breakdown
- Shelter and territory markings for fish

sera has developed a special care system for optimal nutrient supply. **sera florena** is a liquid fertilizer with well-balanced nutrients for aquatic plants that take up their nutrients through the leaves. Being a depot fertilizer in tablet form, **sera florenette A** provides the plant roots with the correct nutrients for c. 4 weeks. Fertilize the plants once weekly with **sera florena** or with **sera florenette A**. In case the plants do not grow properly, e.g. after a transport or recent replanting, we recommend **sera flore-plus**, the “turbo” among the fertilizers.

You will find detailed information about plant care in our **sera guide** “Splendid plants in your aquarium” or on the Internet (www.sera.de).



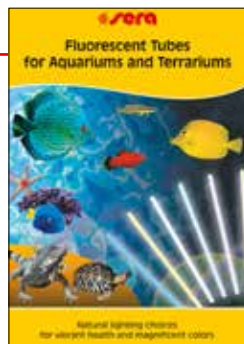
Maintenance plan

Annual care

Replacing the fluorescent tubes

Among others, the correct light is essential for the growth of aquatic plants and for oxygen supply in the aquarium. Even if the fluorescent tubes still work, the radiation required for the aquarium biotope nevertheless loses intensity when the lamps become older. Algae problems and plants not doing well are the visible effects of decreasing or wrong light supply.

If you use two tubes it is recommended to change the first one after 12 months, the second one two months later. Light conditions would change too suddenly if you changed both tubes at the same time.



sera fluorescent tubes ensure constant, correct light for your aquarium for a long time. You will find more information about them in the **sera folder** "Fluorescent Tubes for Aquariums and Terrariums."

Care as required

Accidental overfeeding

The food is still lying on the aquarium bottom an hour after you fed, without the fish being interested in it. In that case you definitely overdid it.

The following measures must be taken immediately:

Use the **sera gravel cleaner** or the **sera gravel washer** for aquariums to siphon the remaining food off (see directions for use for a detailed description), and change approx. 15 – 30% of the aquarium water. Condition the fresh water with **sera aquatan** and **sera bio nitrivec** (see page 22 ff.) and check the water values.



Care as required

High pollutant levels?

The water tests reveal that pollutant levels are above the indicated maximum values. Possible causes are, among others:

- too many fish in relation to the aquarium size
- filter capacity is too low
- overfeeding

Quick help for the aquarium:

sera toxivec

- immediately protects ornamental fish and invertebrates against intoxications by chlorine, nitrite, ammonia and heavy metals
- immediately removes these toxic substances from the aquarium water
- 5 ml are sufficient for 20 liters (5.3 US gal.)

Regular **sera toxivec** addition provided, you can occasionally skip a water change.

After a strong water pollution, the purification bacteria in **sera bio nitrivec** need some support from **sera filter biostart**. These high performance enzymes and micro organisms reduce the amount of sludge as well as unpleasant odors.



Quick help for your aquarium



Maintenance plan

Care as required

Plant care

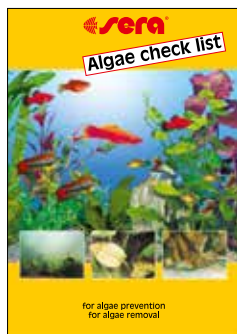
Many new aquarists tend to remove every dead or fallen leaf and every little bit of dirt from the aquarium immediately. Please bear in mind: Every time you hold your hand into the aquarium you will put its inhabitants under stress. Furthermore, substances dangerous for fish, such as soap remainders, fats etc., get into the water every time.

Algae removal

Green algae in spot-like groups may grow on the aquarium glass, but also on bright rocks or plant leaves. Do not be worried too much if you discover this kind of algae in your aquarium. Green algae will grow only in case of satisfying water quality. Algae-eating fish such as *Otocinclus* or *Ancistrus* are suitable for natural algae removal. Sometimes, a few Swordtails or Black Mollies are sufficient to keep algae growth down. Furthermore it is advisable to add more fast-growing plants that will withdraw algae nutrients from the water.

You can easily remove green algae growing on the front pane of the aquarium with the **sera glas clear TA6** algae magnet or with some **sera filter wool**. Unfortunately, there are other kinds of algae which are less harmless.

If you wish to know more about these algae and their combat we will inform you on the Internet (www.sera.de) in the section "Problem solutions in case of diseases and algae". You will get the printed **sera algae check list** from your retailer.



TIP

Best perform cleaning measures only serving for optical purposes together with a partial water change.



Algae layer



Swordtail (*Xiphophorus helleri*)



Black Molly (*Poecilia sphepops*)



Bushy Mouth Ancistrus (*Ancistrus cf. dolichopterus*)



Midget Sucker Catfish (*Otocinclus cf. affinis*)

Care as required

Cleaning the aquarium cover panes

You can remove lime deposits on aquarium cover panes during a water change. Hot water and **sera pH-minus** quickly make the panes transparent again. A “blind” pane considerably lowers light intensity. The plants grow less good. Therefore never wait too long with this maintenance measure.

Cleaning the aquarium glass on the inside

Even with good aquarium care, it is sometimes impossible to avoid slight periphyton growth on the aquarium glass (e.g. green algae). The **sera glas clear TA6** algae magnet provides quick and thorough help in this case.

The brush of the cleaner part consists of high quality, solid plastic. The cover layer of the outside part is made of soft felt. This prevents scratches, even after years of use.



Lime deposits

You can also easily remove lime deposits on the heater or on filter hoses with **sera pH-minus**. Lay on some **sera pH-minus** and allow it to work for a few minutes. Then simply rinse it off (repeat or rub with **sera filter wool** if necessary).



Cleaning the aquarium glass on the outside

Clean the outside of the aquarium glass only after the aquarium is full and the hood is closed again. Then pour some **sera pH-minus** on a soft cloth and thoroughly wipe the pane with it. Rub off remainders with a dry cloth.

Important:

Please wear rubber gloves when using **sera pH-minus** for cleaning aquarium glass or technical equipment, and avoid dashes from getting in your eyes!



Dying fish

Always remove dead fish immediately! You should quickly find out the cause and remove it.

Carry out an extensive water analysis. In particular, check the pH value, the carbonate hardness (KH), chlorine (Cl), ammonium/ammonia (NH_4/NH_3), nitrite (NO_2), phosphate (PO_4) and copper (Cu).

sera water test kits as an early-warning system

sera water test kits are an “early-warning system” allowing you to monitor deviations of optimal water values. You will be able to react with appropriate measures in time if the deviations exceed a certain tolerable range. Aquarium care takes little effort this way, and you will spare your biotope extensive alterations. **sera test kits** are very precise and easy to handle.

sera test kits and **sera water care products** are adjusted to each other. We therefore recommend to use **sera** brand products for simple and optimal water value adjustment.



The **sera aqua-test set** contains the most important water reagents:

- pH value
- total hardness
- carbonate hardness
- nitrite

sera aqua-test box – the professional set contains water test kits for:

- pH value
- total hardness
- carbonate hardness
- ammonium/ammonia
- nitrite
- nitrate
- phosphate
- iron
- copper or chlorine

The water parameters are different and depend on the fishes' country of origin. The conditions in the Amazon are, for example, entirely different from those in Lake Malawi. Maintaining the proper water values is much easier if you keep fish from the same biotope than with fish from different origins.





Aquarium “Lake Malawi”

Aquarium
“Tropical Rainforest”





Total hardness (GH)

The total hardness of the water is determined by the concentration of calcium and magnesium salts. It directly influences the growth of fish, micro organisms and plants. Most ornamental fish kept in aquariums originate from areas with soft water.



Carbonate hardness (KH)

Carbonate hardness is formed from compounds of calcium and magnesium with carbonic acid. It binds acids and therefore prevents a drastically sinking pH value, which would be dangerous for the fish.



Measuring rhythm

Once weekly and with every water change

Ideal water value

between 6 and 16 °dGH
(depends on fishstock)



Measuring rhythm

Once weekly

Ideal water value

between 5 and 10 °dKH

If the value is too high:

- ↓ • Filter through **sera super peat** or add **sera blackwater aquatan**, which contains natural peat extracts, trace elements and humic acids, for fish from soft tropic water such as characins, barbs, catfish and South American cichlids.
- Partial water changes with softer or deionized (reverse osmosis or ion exchange) water

If the value is too low:

- ↑ • Add **sera mineral salt**

If the value is too high:

- ↓ • Add **sera pH-minus**
 - Partial water changes with softer or deionized (reverse osmosis or ion exchange) water
 - Filter through **sera super peat**

If the value is too low:

- ↑ • Add **sera KH/pH-plus**





pH value

The pH value indicates whether the water is acidic (below 7), neutral (7) or alkaline (above 7). The pH value is a logarithmic value, i.e. pH 6 indicates 10 times as much acid as pH 7. You should avoid even pH deviations of one unit as

to prevent irritations of the fishes' mucous membrane.



Ammonium (NH₄)/ammonia (NH₃)

High ammonium levels indicate disturbed or yet insufficient water purification by bacteria, e.g. after a water change or with a new setup. If the pH value is above 7, a larger amount of ammonium will be converted into ammonia, which is toxic to fish. This bears the risk of gill damages and suffocation for the fish. Ammonia levels as low as 0.02 mg/l (ppm) are dangerous.



Measuring rhythm

Once weekly



Measuring rhythm

Once weekly and whenever necessary (fish feeling unwell)

Ideal water value

6 – 7 for most fish and plants from tropical regions; 7.5 – 8.5 for cichlids from Lakes Malawi and Tanganyika.

Ideal water value

0.0 mg/l (ppm) NH₃

If the value is too high:

- ↓ • Add **sera pH-minus**
- Add CO₂ with the **sera flore CO₂ fertilization system**
- Filter through **sera super peat**
- Partial water changes with more acidic water

If the value is too low:

- ↑ • Add **sera KH/pH-plus**
- Partial water changes with more alkaline water, provided there is no detectable ammonium pollution. Condition with a double dose **sera aquatan** to protect the mucous membrane

If the value is too high:

- ↓ • Emergency measure in case of an acute ammonia intoxication: Immediately add **sera toxivec**
- Partial water change (check pH value of the water)
- Condition water with **sera aquatan**, **sera filter biostart** and **sera bio nitrivec**
- Check the filter
- Filter through **sera siporax Professional**
- Feed sparingly
- Add more plants





Nitrite (NO₂)

Nitrite is an intermediate in pollutant breakdown (NH₄/NH₃ to NO₂). In too high concentrations it acts as a blood poison. Any detectable nitrite levels are a water pollution.



Nitrate (NO₃)

Nitrate is the next step in pollutant breakdown (NO₂ to NO₃). It can also directly get into the aquarium with tap water. Fish and plants will not thrive, and algae will grow rapidly if the nitrate level is too high.



Measuring rhythm

Once weekly and whenever necessary (fish feeling unwell)

Ideal water value

0.0 mg/l (ppm) NO₂

If the value is too high:

0.3 – 0.9 mg/l (ppm) NO₂: Water pollution

- ↓ • Immediate measure: Add **sera toxivec**
 - Carry out a partial water change, siphon off the bottom with the **sera gravel washer**, condition water with **sera aquatan** and **sera bio nitrivec**
 - Check the filter
 - Filter through **sera siporax Professional**
 - Feed sparingly
 - Check whether a fish has died

from 0.9 mg/l (ppm) NO₂: Severe water pollution

Fish are in danger

- ↓ • Immediate measure: Proceed as described above
 - Partial water change: Proceed as described above
 - Check the filter
 - Filter through **sera siporax Professional**
 - Remove the cause of water pollution

3.3 mg/l (ppm) NO₂ and above: Acute danger to the fishes' life

- ↓ • Add a double dose of **sera toxivec** as an emergency measure
 - Immediately change 30% of the water, proceeding as described above
 - Change 30% of the water again after 12 – 24 hours, proceeding as described above



Measuring rhythm

Once weekly and whenever necessary (increased algae growth)

Ideal water value

maximum 20 mg/l (ppm) NO₃

If the value is too high:

from 20 mg/l (ppm) NO₃

- ↓ • use 1 liter (1 US quart) **sera siporax Professional** per each 100 liters (26.5 US gal.) of water in the filter
 - additionally activate the filter with **sera filter biostart**
 - add fast-growing plants
 - carry out partial water changes with water low in nitrate
 - possibly reduce fish stock and feeding

above 100 mg/l (ppm) NO₃:

- ↓ • immediately change 30% of the water and proceed as described above





Iron (Fe)

Iron is one of many important nutrients for all aquatic plants. Too low iron levels adversely affect the plants. However, too much iron will harm the fish and also some plants.



Oxygen (O₂)

Oxygen is essential for fish and other living beings in an aquarium. Plants also require small amounts of oxygen at night. Oxygen deficiency leads to breathing problems for the fish. In severe cases, fish and other animals may even suffocate.



Measuring rhythm

Once weekly and whenever necessary (increased algae growth, poor plant growth)



Measuring rhythm

Every fortnight, in the morning and in the evening, and in case the fish feel unwell. The levels should be higher in the evening than in the morning.

Ideal water value

0.5 – 1.0 mg/l (ppm) Fe

If the value is too high:

- ↓ • Partial water change, condition water with **sera aquatan** and **sera bio nitrivec**

If the value is too low:

- ↑ • Fertilize with **sera florena** and **sera florenette A**

Please note: Due to the slow release of nutrients, which are also directly taken up by the roots, you cannot monitor fertilizer tablets with iron test kits.

Ideal water value

above 4 mg/l (ppm) O₂

If the value is too low:

- ↑ • Quickly increase oxygen level with **sera O₂ plus**
 - Aerate water with an air pump (**sera air plus**) and an airstone (**sera air set**)
 - Increase surface agitation with a **sera internal filter** (e.g. **sera fil 60/120**)
 - Remove causes for oxygen deficiency





Carbon dioxide (CO₂)

CO₂ is an important nutrient for all plants. CO₂ levels between 10 and 40 mg/l (ppm) have proven best. The aquarium fish will also get along well with this.



Copper (Cu)

Copper is very toxic to fish, invertebrates and micro organisms. Copper can get into the aquarium with tap water or with copper-containing treatments. The copper level must be monitored carefully as to avoid overdoses.



Measuring rhythm

Daily (without much effort, using the **sera CO₂ long-term indicator**)

Ideal water value

Between 10 and 40 mg/l (ppm) CO₂, for delicate fish species up to 20 mg/l (ppm)

If the value is too high:

- ↓ • Reduce CO₂ addition
- Remove acute overdose by aerating with an air pump (**sera air plus**) and an airstone (**sera air set**)
- The **seramic pH Controller** controls and regulates CO₂ fertilization fully automatically

If the value is too low:

- ↑ • Add CO₂ with the **sera flore CO₂ fertilization system**
- Small aquariums: **sera CO₂-Start**



Measuring rhythm

With every water change (check tap water), if the fish feel unwell and when using copper-containing treatments

Ideal water value

0.0 mg/l (ppm) Cu
 above 0.3 mg/l (ppm) Cu: fatal for snails
 above 1.0 mg/l (ppm) Cu: fatal for all organisms in the aquarium

If the value is too high:

- ↓ • Carry out large water changes with copper-free water, condition aquarium water with a double dose of **sera aquatan** and **sera bio nitrivec** plus **sera toxivec**





Phosphate (PO₄)

Phosphate fulfills important functions during the metabolism of all aquarium inhabitants. However, too high phosphate levels will arise from too dense fish stock, food rich in phosphates and plant fertilizers containing phosphate. In combination with high nitrate levels, high phosphate levels cause excessive algae growth.



Chlorine (Cl)

Chlorine is often present in tap water and may get into the aquarium with new setups or with a water change. Chlorine is corrosive to the mucous membranes of the fish, even in low dosage. Furthermore it affects waste breakdown in the filter as it lowers the number of useful purification bacteria.



Measuring rhythm

Once weekly and whenever necessary (increased algae growth)



Measuring rhythm

After a new setup, and when changing or topping up water (check tap water)

Ideal water value

not higher than 1 mg/l (ppm) PO₄
[better: max. 0.5 mg/l (ppm) PO₄]

Ideal water value

below 0.02 mg/l (ppm) Cl

If the value is too high:

- ↓ • Change 10 – 30% water once weekly
- Add fast-growing plants
- Add **sera phosvec** as an immediate measure
- Feed sparingly
- Use **sera phosvec Granulat** in the filter for permanent removal

If the value is too high:

- ↓ • When carrying out a water change, fill tap water into a bucket with a spray nozzle or through a clean sieve. Then condition it with **sera toxivec** before filling it into the aquarium. 25 ml (approx. 0.8 fl. oz.) **sera toxivec** will neutralize 3.4 mg/l (ppm) chlorine in 100 liters (26.5 US gal.) of water
- Condition aquarium water with **sera aquatan** and **sera bio nitrivec**



Water check on the Internet

The **sera online laboratory** makes aquarium care much easier and is a lot of fun. You will easily learn how to use water test kits and water conditioners. You can check the quality of your aquarium and, of course, also your pond water at any time.

This has essential advantages:

- constantly good water quality
- less problems with algae
- less time required for aquarium care

The screenshot shows the 'sera Online Lab' interface. The top navigation bar includes links for 'Registration', 'Information', 'Products', and 'Services'. A search bar is located on the right. The left sidebar contains a 'Products' section with links to 'Testkits', 'Conditioners', 'Water plants', and 'Decorations'. Below this is a 'Sera Services' section with links to 'Guides', 'Sera - Interactive', 'Sera Online Lab', 'Downloads', 'FAQ', 'Videos', 'News archive', and 'About us'. The main content area is titled 'sera Online Lab' and features a 'Quick test' section. This section includes a 'Quick test' button and a 'Testcenter' button. Below these is a 'Quick test' form with a 'Analyse values' section. This section contains a table with various water parameters and their corresponding units. The parameters are: Acidity (pH), Total hardness (GH), Carbonate hardness (KH), Ammonia/nitrogen (mg/l), Nitrite (mg/l), Nitrate (mg/l), Phosphate (mg/l), Iron (mg/l), Copper (mg/l), Oxygen (mg/l), Conductivity (µS/cm), and Chloride (mg/l). Each parameter has a 'Please select' dropdown menu. Below the table is a 'Result' button. The bottom of the page features a 'sera guide booklets' section with a link to 'Browse our extensive guide booklets...' and an 'Also interesting...' section with links to 'Contact & feedback', 'Frequently asked questions', 'All news & Press service', and 'Sera Products in shops'. The footer contains the text 'SERMAP CONTACT PRIVACY POLICY COLOPHON' and '© 2011 sera GmbH'.

Parameter	Unit
Acidity	pH
Total hardness	GH
Carbonate hardness	KH
Ammonia/nitrogen	mg/l
Nitrite	mg/l
Nitrate	mg/l
Phosphate	mg/l
Iron	mg/l
Copper	mg/l
Oxygen	mg/l
Conductivity	µS/cm
Chloride	mg/l

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www.seralabor.com

Water changes



Not all waste products can be broken down completely in the aquarium. Substances such as nitrates and phosphates, which in large amounts are toxic to the fish, will necessarily enrich in every aquarium. In nature, these substances are washed away or diluted by flowing water. You will achieve the same effect with regular water changes.

When, and how much water?

It is recommended to change relatively small amounts of c. 20% once weekly. Larger water changes (above 50%) disturb the equilibrium in the aquarium biotope, and therefore should remain reserved for emergencies such as an acute nitrite or copper intoxication. In that case you should by all means also use **sera toxivec** (see pages 13, 14, 16 and 17).

Water change frequency and amounts of changed water depend on

- aquarium size
- number and size of aquarium inhabitants

Water changes

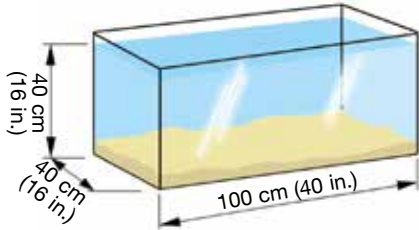
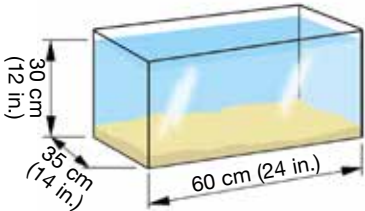
Examples for water amount and intervals:

Calculation of the aquarium contents:

60 cm (24 in.) width x 30 cm (12 in.) height
x 35 cm (14 in.) depth
= 63,000 cm³
= 63 liters (16.6 US gal.) gross volume

or

100 cm (40 in.) width x 40 cm (16 in.) height
x 40 cm (16 in.) depth
= 160,000 cm³
= 160 liters (42 US gal.) gross volume



The following chart is applicable for community aquariums with normal fish stock. The given data have proven well in practice.

Aquarium size/ Contents	Amount to be changed	Interval
50 – 60 l (13 – 16 US gal.)	10 – 20 l (2.6 – 5.3 US gal.)	weekly
80 – 100 l (21 – 26.5 US gal.)	20 l (5.3 US gal.)	weekly
110 – 120 l (29 – 32 US gal.)	20 – 30 l (5.3 – 7.9 US gal.)	weekly
160 – 200 l (42 – 53 US gal.)	30 – 40 l (7.9 – 10.6 US gal.)	weekly
above 250 l (66 US gal.)	20 %	every fortnight

Partial water changes are carried out too infrequently

Large amounts of toxic substances quickly enrich in the small aquarium biotope. It is simply wrong to believe it is possible to just wait three months and then in return change more than half of the water. In that case you should not be puzzled about thriving algae and fish not doing well at all.

Adding **sera toxivec** and **sera filter bio-start** allows to skip a water change if once you did not find the time. However, the water values should still be checked with the **sera water test kits**.



Preparation

You will need:

- A watering can and two clean buckets reserved only for the aquarium. They must never have been in contact with cleaning agents.
- Two meters (2.2 yd.) aquarium hose or, even better, a **sera gravel washer**.
- A towel or a shallow bowl in case of spilling water.
- By all means pull the mains plugs, e.g. those of the heater, the filter, and the lighting.



How to remove water from the tank

First place the two buckets on the towel or in the bowl. Then let the water flow from the aquarium into the buckets. There are different ways to do so:

Many aquarists hold the hose end into the aquarium and then briefly suck the water from the other end with their mouth. However, this method requires some practice. Sometimes, the water either will not flow, or you may accidentally swallow a big gulp of aquarium water.

You can siphon the water off more elegantly with the **sera gravel washer**. By doing so, you will serve two purposes at once. You will easily and thoroughly remove sludge from the aquarium gravel with the **sera gravel washer**, and you will change a part of the water at the same time.

After you removed the aquarium water as far as necessary you can now also perform smaller cleaning activities.



An important tip

When working with the **sera gravel washer**, please make sure to not clean an area of 5 cm (2 in.) around every plant. This will protect the delicate plant roots. Mark the outside of the aquarium glass with adhesive tape or the like up to where you wish to empty the tank.

Water changes

How to condition tap water

Now the aquarium is topped up with tap water which, however, needs to be conditioned according to the requirements of the ornamental fish. Remember, our water suppliers do not necessarily think about aquariums when preparing the drinking water! Their task is to provide water suitable for human consumption. Drinking water must be of good taste and very low in nutrients and pathogens, and it must not destroy the pipes.



Consequently, quite often disinfecting chemicals such as chlorine are used to kill dangerous bacteria and pathogens.

Therefore water that we can drink is often too aggressive for the sensitive mucous membranes and too toxic to ornamental fish. At the same time, this water hardly contains any beneficial bacteria at all. Chlorine also considerably reduces the number of purification bacteria in an aquarium.

The **sera** water conditioners ensure water conditions according to nature. Fill the tap water into a watering can and condition it with **sera aquatan**, **sera bio nitrivec**, **sera mineral salt** and, depending on the fish stock, **sera blackwater aquatan**.

Add **sera toxivec** directly into the aquarium water as to immediately remove remaining pollutant levels.

sera toxivec



- immediately protects ornamental fish and invertebrates against intoxications by chlorine, nitrite, ammonia and heavy metals
- immediately removes these toxic substances from the aquarium water
- 5 ml (approx. 1 teaspoon) are sufficient for 20 liters (5.3 US gal.)
- creates ideal conditions for **sera bio nitrivec** purification bacteria

sera aquatan



- neutralizes dissolved salts and aggressive chlorine
- immediately binds harmful metal ions
- protects and stabilizes the mucous membranes of the fish due to the valuable vitamin B complex
- supports the growth of plants and micro organisms due to the vitamin B complex
- reduces stress of the fish during transport and introduction into the new tank
- makes water suitable for fish and bio cultures
- accelerates wound healing after smaller injuries due to skin protecting colloids



sera bio nitrivec

- bio cultures for filter and aquarium water
- breaks down ammonium and nitrite in a natural way
- with long-term effect



sera blackwater aquatan

- ensures water conditions similar to those in the tropic regions in the aquarium, due to natural peat extracts, trace elements, vitamins and humic acids
- apply **sera blackwater aquatan** together with **sera aquatan** if you keep, e.g., tetras, barbs or other softwater fish



sera mineral salt

- enriches the tap water with minerals occurring in natural water in the biologically correct amounts

Important:

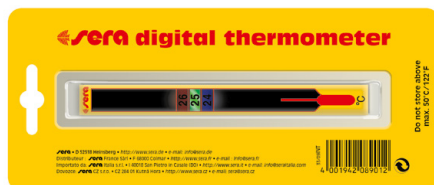
Test the water after conditioning.



The correct water temperature

Please try to adjust the temperature of the fresh water roughly to the aquarium water temperature. It will, however, cause no harm if the fresh water is slightly cooler than the aquarium water.

Quite contrary: Many fish become very agile after the water has become slightly cooler (not more than by 1 – 2°C / up to 3°F). Metabolism and the readiness to spawn are enhanced.



Temperature ranges:

brown: rising tendency

green: current temperature

blue: falling tendency

Adding water

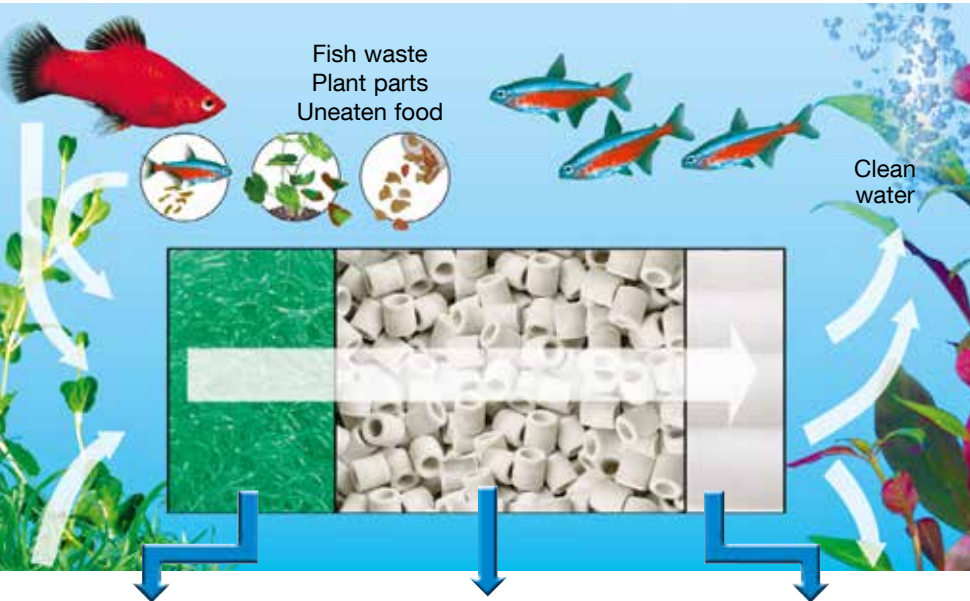
When adding water, make sure not to whirl up too much gravel or even hollow out plant roots. A hose makes this much easier.

As soon as after the second or third water change you will have enough practice that the whole work is done in 15 to 20 minutes. And your ornamental fish and aquatic plants will do fine in an aquarium kept this way.



Filter media and filter maintenance

Schematic diagram showing the water purification in aquariums using **sera** filter media applied in an internal or external filter.



Mechanical prefiltration

sera biofibres or **sera filter sponge** collect coarse particles and floating matter.

Biological water purification

Purification bacteria from **sera filter biostart** settle in **sera siporax Professional** and immediately start the biological breakdown of pollutants within the filter. Purification bacteria settling in volcanic rock from **sera bio nitrivec** clean the water inside the aquarium.

Ammonium/ammonia
(NH_4/NH_3)

Nitrite (NO_2)

Nitrate (NO_3)

Plant nutrients

Clean water

Final mechanical purification

sera filter wool or the **sera filter mat** (floss) collect fine dirt particles. When combined with the **sera filter sponge**, the **sera filter mat** (floss) can also be used for mechanical prefiltration.

sera filter media for special tasks

sera super peat slowly releases valuable humic acids and trace elements into the water. This is ideal for, e.g., discus, dwarf cichlids and many tetras.

sera super carbon is used for removing organic remainders, e.g. after a disease treatment.

sera phosvec Granulat easily and reliably removes phosphates. It therefore serves for algae prevention.



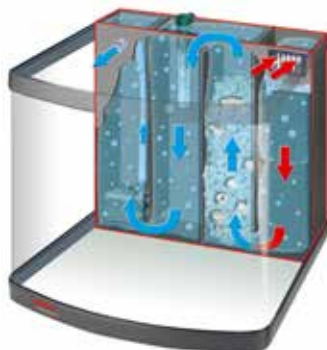
sera filter equipment

sera fil 60/120 internal aquarium filter

- small and very powerful
- for aquariums up to 60/120 liters (16/32 US gal.)
- expandable with filter chamber modules

sera 4 chamber internal filter in the sera Biotop Nano Cube 60

- compact and unobtrusive
- large filter volume due to 4 chamber system
- for aquariums up to 60 liters (16 US gal.)



sera fil bioactive external filters are economic, powerful, easy to operate and immediately biologically active!

sera fil bioactive 130 and 130 + UV

- for aquariums up to 130 liters (34 US gal.)

sera fil bioactive 250 and 250 + UV

- for aquariums up to 250 liters (66 US gal.)

sera fil bioactive 400 + UV

- for aquariums up to 400 liters (106 US gal.)



You will find detailed information about **sera** filter media and **sera** filter equipment in the **sera guide** "How to set up an aquarium according to nature" or on the Internet (www.sera.de).

Filter media and filter maintenance

Cleaning the filter and the filter media

a) Cleaning the filter

The parts of the filter are cleaned under running water without using cleaning agents. You will find detailed information on how to clean the filter in the according directions for use.

b) Rinsing biological filter media

Filter media for settling purification bacteria such as **sera siporax Professional**, **sera biopur forte** or filter sponges are only gently rinsed but never washed out with cleaning agents. Cleaning agents destroy almost all useful bacteria in an aquarium. In that case, no pollutants would be broken down for several weeks.

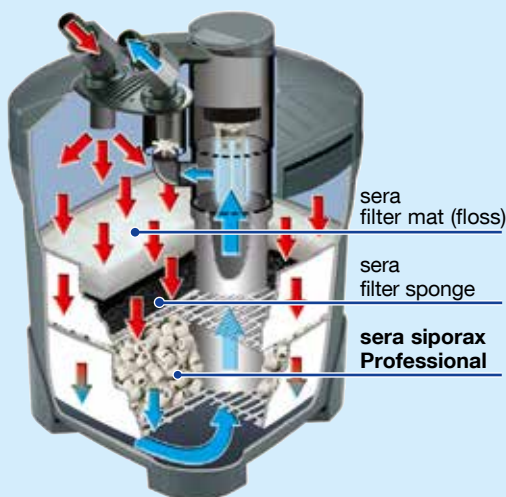
It is best to rinse the filter media in a bucket with aquarium water. You can use the water from the water change to do so. The bucket must never have been in contact with any cleaning agent. This will remove coarse dirt without all the bacteria being washed off. We recommend to clean only a part of the biological filter media at one time as to prevent too many filter bacteria disappear. Afterwards, add some **sera bio nitrivec** onto the filter media. By doing so you will support quick activation of the biological water purification.

c) Replacing mechanical filter media

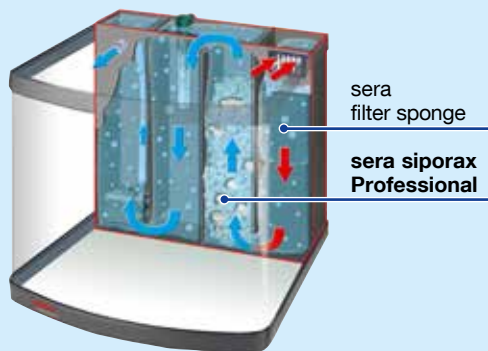
sera filter wool, **sera filter mat (floss)** or **sera biofibres**, to name but a few, collect coarse and fine dirt particles. You should wash out these filter materials in some aquarium water or, in case of strong pollution, replace them.

Cleaning filter media in sera

sera fil bioactive external filter



sera 4 chamber internal filter in the sera Biotop Nano Cube 60



external and internal filters

1 Biological filter media

- rinse in some aquarium water in case of normal fish stock: every 3 – 4 months
- in case of optimal fish stock: every 6 – 12 months
- afterwards: Quick activation of the biological water purification with **sera bio nitrivec**

2 Mechanical filter media

- rinse in some aquarium water
- replace in case of strong pollution
- as necessary (reduced water flow)



Cleaning intervals

We recommend to replace **sera filter wool** and **sera biofibres coarse** in case of strong pollution.

Please wash out the filter materials for settling purification bacteria

- every 3 to 4 months in case of normal fish stock
- every 6 to 12 months in case of optimal fish stock

This of course also depends on the filter size compared to the aquarium size. If the filter is too small for an aquarium with many fish you will need to clean it more often. In this case we recommend to install a biologically more powerful filter. Purification intervals will prolong if the different filter media are optimally arranged.

Cleaning out of schedule

In case of considerably reduced water flow because the filter is clogged.

Application of special filter media

sera super carbon (filter carbon) and **sera super peat** (blackpeat granulate) should generally be replaced after 6 weeks.

Please test the nitrite level with the **sera nitrite-Test** (NO₂) twice weekly for at least 4 weeks every time you rinsed the filter material.

Easy filter media change

Adding and removing filter media becomes much easier with **sera filter media bags**. The filter media remain within the filter in a proper arrangement. Cleaning the filter media is easier to handle.



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For natural aquariums

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