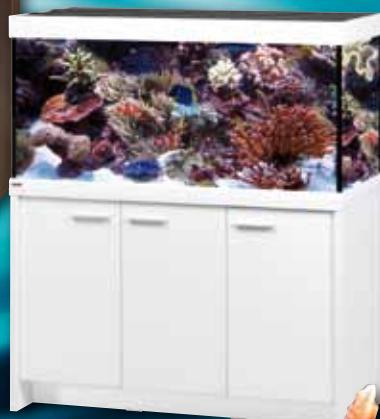
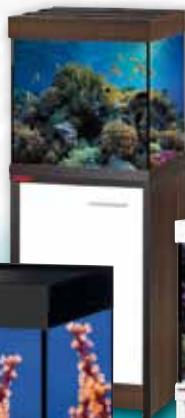


EHEIM

Guide for marine water aquariums

Instruction for entry into an exotic world

The most important tips



Reef aquarium

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EHEIM

Dear reader,

“... just wonderful!” When visitors see a tropical coral reef aquarium they usually go into raptures. The exotic colours have an almost magical effect.

Admittedly a marine water aquarium first has to “grow” for its splendour to unfold. This can take up to two years so you will need to be patient. Unfortunately not everyone can do that and some newcomers give up prematurely because they fail to appreciate the contexts adequately.

With this Guide we would like to help you understand those contexts better and do the right things from the outset. With that in mind we have brought the essentials together in such a way that you don’t have to read any lengthy treatises. You get the basics at the outset.

You can also look for technical literature which goes into greater detail or join an aquarium club but, most importantly, you should get in touch with a specialist dealer in marine water aquariums if you have any queries.

We wish you success and joy with your marine water aquarium.

Your EHEIM Aquarium Team

Marine water aquariums – a special fascination

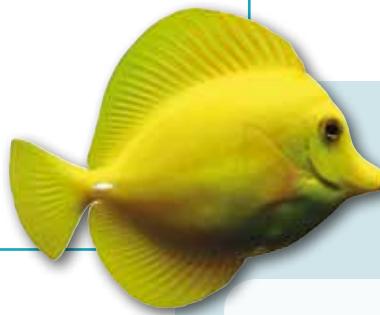


Magnificent coral reefs, shimmering fish, a lively bustle of bright hues and shifting shapes and colours. A marvellous and exotic underwater world which is attracting new enthusiasts all the time: marine water – or reef – aquariums are becoming increasingly popular. Not only are they an exceptionally eye-catching feature in the home, but also a special source of fascination for observers, who see how corals grow, how the colours change, how a new life unfolds and are always discovering exciting things. Nowadays you no longer need to be an experienced aquarium keeper to go in for reef aquaria.

Fresh or marine water aquariums – what's the difference?

In a **freshwater aquarium** fish and other occupants live in a state of symbiosis with plants. The water comes out of the tap and has to be filtered and processed but, basically, everything is straightforward. Thanks to their relatively uncomplicated equipment and the fact that they are comparatively simple to look after, freshwater aquaria are also suitable for beginners. The outlay is within limits.

Marine water aquariums are rather more demanding. First the tap-water must be purified and enriched with salt. Caring for corals and other animals requires more attention, a lot of patience and more expensive equipment. It is only partly true to say that marine water or reef aquaria mean a lot of work, because in recent years quite a lot has happened. New discoveries about the sensitive eco-system of a coral reef and technical advances have made a lot of things much simpler. Even beginners can keep a reef aquarium if they abide by the rules.



A few basic concepts which you should be familiar with

If you speak to an aquarium-keeper or read up on the subject, you will frequently come across various terms which are seldom further explained. This results in confusion and misunderstanding, so here are a few definitions:

Marine water or reef aquaria

Saltwater or seawater aquarium is actually the general term for any aquarium which is used with saltwater (including specialised types such as North Sea, Mediterranean and mangrove aquaria etc.)

There are pure fish aquaria (occupied solely by fish), as well as aquaria for invertebrates (e.g. nano aquaria), but what is usually meant is a reef or coral-reef aquarium. This is a tropical marine water aquarium in which corals form a close living community (this is known as biocoenosis), with fish, crabs, echinoderms (creatures with spines) and a large number of micro-organisms and small animals.

Corals and coral reefs

Corals are not plants, as many believe, but colonies of tiny sessile ("tight-sitting") coelenterates, which include sea anemones and jelly fish. In an aquarium it is mainly reef-forming stony corals that are used. They secrete calcium and eventually

form skeletons. The dead skeletal material is regularly overgrown with living tissue and this is how coral reefs are eventually formed. Over thousands of years huge reefs and islands were formed in this way, including the Bahamas, Bermuda and the Maldives.

Tropical stony corals (sometimes called soft corals or leather corals, amongst other things) derive their nutrients chiefly from small, single-cell algae (zooxanthellae), which settle symbiotically in their tissue. In a well-lit marine water aquarium, corals can survive and grow for years without feeding.

As well as "zooxanthellate" corals there are several other types but they feed on each other and are not easy to keep in an aquarium for beginners.

Live rocks

In the world of aquaria "live rock" means pieces of reef in which plant and animal organisms live. When the aquarium is being set up, they introduce sediments, bacteria, a variety of small life forms including crustaceans, feather duster worms, algae and sponges into the aquarium. It is only with these organisms that the eco-system can function effectively in the marine water aquarium. They are a natural bio filter and process the water.

You will need:

Basic equipment

If you want to set up a marine water aquarium, you first need some good quality equipment. The most important is:

Marine water aquarium tank

The aquarium tank is the central element in the marine water system so when deciding what to buy, it is essential to take quality into account (and don't let yourself be enticed into using a freshwater tank.) Saltwater is aggressive and all seals must be able to withstand it.

You should set your sights on as big an aquarium as possible or it will soon be too small. It won't make much difference to the purchase price and the bigger the aquarium, the easier it will be to look after.

The minimum size is 150 litres but 250 – 500 litres or more is recommended. As a matter of course, marine water aquariums should be deeper than freshwater tanks (50 – 60 cm) as it is necessary to create different light zones (dim light, twilight, sunlight and strong light). Coral reefs will also usually grow upwards.

The EHEIM marine water aquarium offers the best requirements and good quality. They are also fitted with a patented, ultra-quiet overflow shaft.

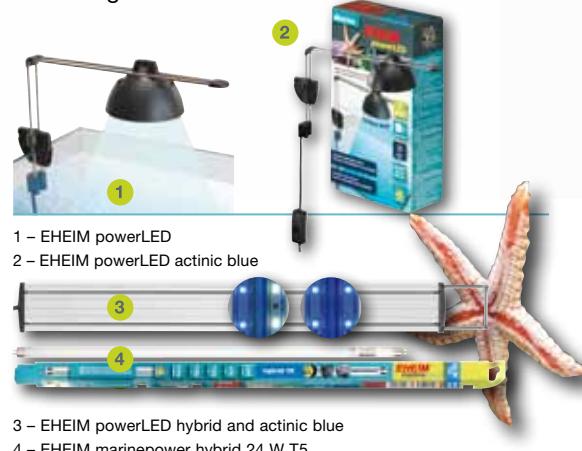


EHEIM incipia marine 200
EHEIM scubacube marine 270

Lighting

The correct light is critical. It must be lighter in a marine water aquarium than in a freshwater aquarium, to penetrate into the tissue of zooxanthellate corals. It must also regulate the growth of algae. The colour spectrum of the light (white and blue) should be effectively balanced with the blue element being predominant (10 000 Kelvin and up).

Until recently, correct lighting was a problem. Nowadays it is possible to achieve maximum efficiency and ideal colour values with EHEIM's new T5 fluorescent tubes (diameter 16 mm) or EHEIM LED lamps. EHEIM aquarium combinations are fitted with the optimum lighting according to size.



3 - EHEIM powerLED hybrid and actinic blue
4 - EHEIM marinepower hybrid 24 W T5

Equipment space area

Ideally the equipment will be located in an area beneath the aquarium, in the aquarium furniture. Here you will need sufficient space for the filter tank (known as the "filter sump") with skimmers, filters, feed pumps, osmosis store, automatic top-up, power supply and gauges/adjusters etc. as necessary. Tubes and pipe work must therefore pass through the base of the aquarium.

If you opt for an EHEIM marine water aquarium combination you will have the complete basics, including filter tank, pre-installed pipes etc.

Filter tank

The filter tank ("filter sump") is a specialised tank in the bottom cabinet. It should consist of a number of chambers, including:

- Intake chamber – this is where the skimmer is located and where the water from the aquarium enters
- Filtration chamber – this is where filter mats (in the role of an internal filter, for example) or if required, fitted external filters, assume the task of filtration
- Collection chamber (or clear water chamber) – this is where the return pump is located which feeds the purified water back into the aquarium
- Plus, if required, an evaporated water storage chamber for reverse osmosis water (freshwater without any salt!) – if necessary with automatic top-up



Equipment tank in the bottom cupboard



EHEIM SKIMmarine 800

Protein skimmer

The skimmer is the main filter in a marine water aquarium. This is used to immediately remove waste products (excreta from fish and other animals in the form of ammonium/ammonia, proteins etc.), from the water before they oxidise and form toxic end-products such as nitrate and phosphate.

The skimmer typically works by producing bubbles of air to which molecules of protein remain attached by electrostatic attraction. Turbulence creates a firm brown foam (flootation) which is fed into a collection container, where it can be disposed of.

There are various methods of producing foam. The EHEIM SKIMmarine 800 skimmer makes particularly effective, quiet and energy-saving use of a new type of needle-wheel design and venturi unit.

You will need: Basic equipment

Mechanical filter (if required with auxiliary filter)

In an ideal situation, the protein skimmer and a mechanical internal filter will suffice as filters in a marine water system, which has been run in and looked after properly, in particular to hold back particles of dirt. The task of biological filtration is largely assumed by the organisms in the aquarium.

In order to attain the optimum water values – especially in the run-in phase – further filtration may be necessary, including, for example, biological filtration to break down any harmful chemicals and active carbon filtration to eliminate what is known CDOM (yellow coloured dissolved organic matter).

Use a suitable EHEIM external filter, which can be fitted with a variety of filter media (only peat is taboo!).



Return pump

In order to return the clean water from the collection chamber in the filter tank back into the aquarium, you will need a return pump, unless the water is pumped into the aquarium using a different piece of equipment (e.g. an external filter).

Some EHEIM marine water aquarium combinations are already fitted with a suitable pump.

Circulation pumps

In a marine water aquarium the current is absolutely essential. It distributes temperature, gases, particles of food, it raises the oxygen content, nurtures growth in colonies of coral, removes metabolic waste, prevents films of scum from forming (from deposits) on the surface of the water and reduces the pH value and disease.

A high rate of flow is important so the circulation should be about ten times the volume of the tank per hour (3000 litres per hour in the case of a 300 litre aquarium). Even so, only minimal flow should touch the animals and for that reason the jet of water must fan out over a wide area.

EHEIM streamON circulation pumps meet all the requirements as they ensure optimum circulation of water and a natural, gentle current.



Reverse osmosis system

The ecosystem in a marine water aquarium is highly sensitive and for that reason it requires particularly pure water. A reverse-osmosis system is therefore part of the basic equipment.

Reverse osmosis is a natural, purely physical process of filtering salts and harmful chemicals out of tap-water. It forces the water through a membrane which has such fine pores that it only lets molecules of water through. Most of the substances that are dissolved in tap-water are unable to penetrate the membrane and so ultra-pure water is created.

There is a wide range of reverse-osmosis systems – from small units which are connected direct to the tap, to more complex installations with additional filtration. For the beginners point of entry, a small system with a pre-filter and membrane will suffice.

Automatic top-up

Water is always evaporating, especially in open aquaria. In closed tanks too, water is lost because of the flow (circulation pump) and also from the filter tank (skimmer). In a marine water aquarium the loss of water can have fatal consequences because it will concentrate the salt content (increased density), increase the amount of harmful chemicals and organic impurities and make any life impossible.

With an automatic top-up you will be able to maintain constant water levels at all times (even when you are on holiday). A sensor monitors the level and a dosing pump makes up the shortage of water by feeding fresh-water (e.g. from the reverse osmosis water storage chamber) into the aquarium.



Densimeter

The salt content in a coral reef aquarium must be between 3.4 and 3.57 % and should be measured and adjusted on a regular basis. In the case of a partial water change in particular, the water value must be exactly the same as the aquarium water. The commonest form of gauge is a hydrometer which measures the weight of the water per litre at 25 °C. As salt has a weight of its own, water will weigh more as the salt content increases. Water temperature also has an effect on the weight, it is therefore usual to calibrate the equipment at 25 °C.

One alternative is the refractometer, which works on the basis of the difference in the refraction of light in distilled water and water which contains salt.

Heating (Cooling)

The temperature in the tropical marine aquarium must be between 24 and 26 °C. Only a few degrees above or below can disrupt the balance and endanger the life of corals and other occupants.

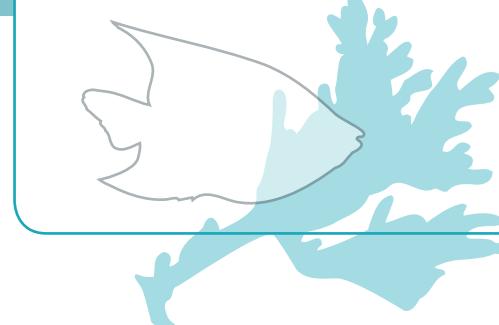
You can adjust the EHEIM thermo controlled heaters accurately between 18 and 34 °C. They will maintain the specified temperature at a constant level, are fully submersible and can be fixed in place in the aquarium (or in the filter tank) simply by using suction cups. The heaters are available in various sizes for aquariums between 20 and 1000 litres.

For cooling – possibly on particularly hot summer days – it is best to place a ventilator on the open aquarium or purchase a specialised cooling device.

Other equipment and accessories – see page 27-29



Marine water



Life in your aquarium is dependent on the correct saltwater. For that reason you must prepare things properly. (For further details of water values and filtration see page 16 onwards)

Initial water (Osmosis water)

When filling the aquarium for the first time – and subsequently when partially changing the water – you will need a sufficient amount of water. You can use tap-water but it must be cleaned by reverse osmosis (see Annex: Reverse Osmosis, page 9) and not contain any hazardous residues.

It is particularly important that the nitrate content is minimal (max. 10 mg/l), and that there should be no phosphate (max. 0,1 mg/l), heavy metal (copper, zinc) or silica acid present. Pesticides and medication residues must also be eliminated. These are best removed by activated carbon filtration.

For analysing water there are test kits available from aquarium dealers – and for specific cleaning functions, suitable filtration media from EHEIM.

Sea-salt

Nowadays, various kinds of sea-salt are available in the aquarium trade: "standard salt" (not to be confused with table salt!) and various "special salts", but for beginners, experts recommend "standard

salt". It should be a reliable brand which contains all the important minerals and/or trace elements and it is best to buy it in a sealed bucket so that it does not attract moisture during storage.

For a tropical coral-reef aquarium the salt content should be between 34 and 35.7g per litre. You should ideally weigh out the quantity (e.g. 35 g/l) and pour it slowly into the start up water (not the other way round) and mix thoroughly.

Then (after 24 hours) you must heat the water up to 25 °C (see EHEIM thermo-control heater, page 10), measure the density (see page 10) and adjust salt content.

Water container

When you fill the aquarium for the first time you can mix the water in the aquarium. When doing partial water changes this is not possible.

Ideally you should put the water in a large container (bath, bucket or similar). Obviously the container must be clean and must not give off any harmful chemicals. A (very clean) plastic bucket can be used for filling.

You will need:

Installation and decoration

For decoration you will basically need dry rock, living rock and substrate. When setting up you will need to leave sufficient space, as the corals will need room to grow, fish will need plenty of room to swim in, and as much light as possible must reach the corals.

Dry rock

As a basis for the establishment of animals, bacteria and other organisms you will need dry rock, which must be porous and "full of holes". Dead reef rock or artificial ceramic reefs, among other things, will also be suitable.

The amount depends on the size of the aquarium but you should allow for the fact you will be adding at least 40 – 50 % of living rock. It is also not advisable to use excessively large chunks to facilitate flexible decoration and make it easier to replace individual parts if required.

Note: you must never use calcium rock containing metallic elements or lava rock (of the kind which is frequently to be found in freshwater aquariums) because many substances dissolve in basic marine water. Materials such as wood, roots and quartz sand (silica) likewise have no place in a marinewater aquarium.

Live rock

Live rocks are pieces of reef rock in which the original organisms are living. They are used to speed up the biology. The living rock is imported or "cultivated" and, when buying, it is essential that you look for reliable quality because once the pieces have been stored in dry or unsuitable water they are unusable.

Live rocks will – as stated – make up at least 40 - 50 % of your decoration; they will attach themselves (once there is water in the aquarium) to the dry rock. Some experts recommend as much as 60 - 70 % of living rock.

Substrate

Use up to 3 - 4 centimetres of coral or sand with a grain size of 1–2 millimetres.

The substrate you use, however, will depend on the animals you want to keep. Wrasse and goby, for example, need a sandy area because at night they dig and filter their food from the seabed. In this case the substrate must be finer and deeper, although it unfortunately has a tendency to decay.

The (thoroughly cleaned!) substrate is always laid last, once the decoration and water are in the aquarium. This prevents any decaying beneath the rocks, and digging animals cannot knock the structure over.

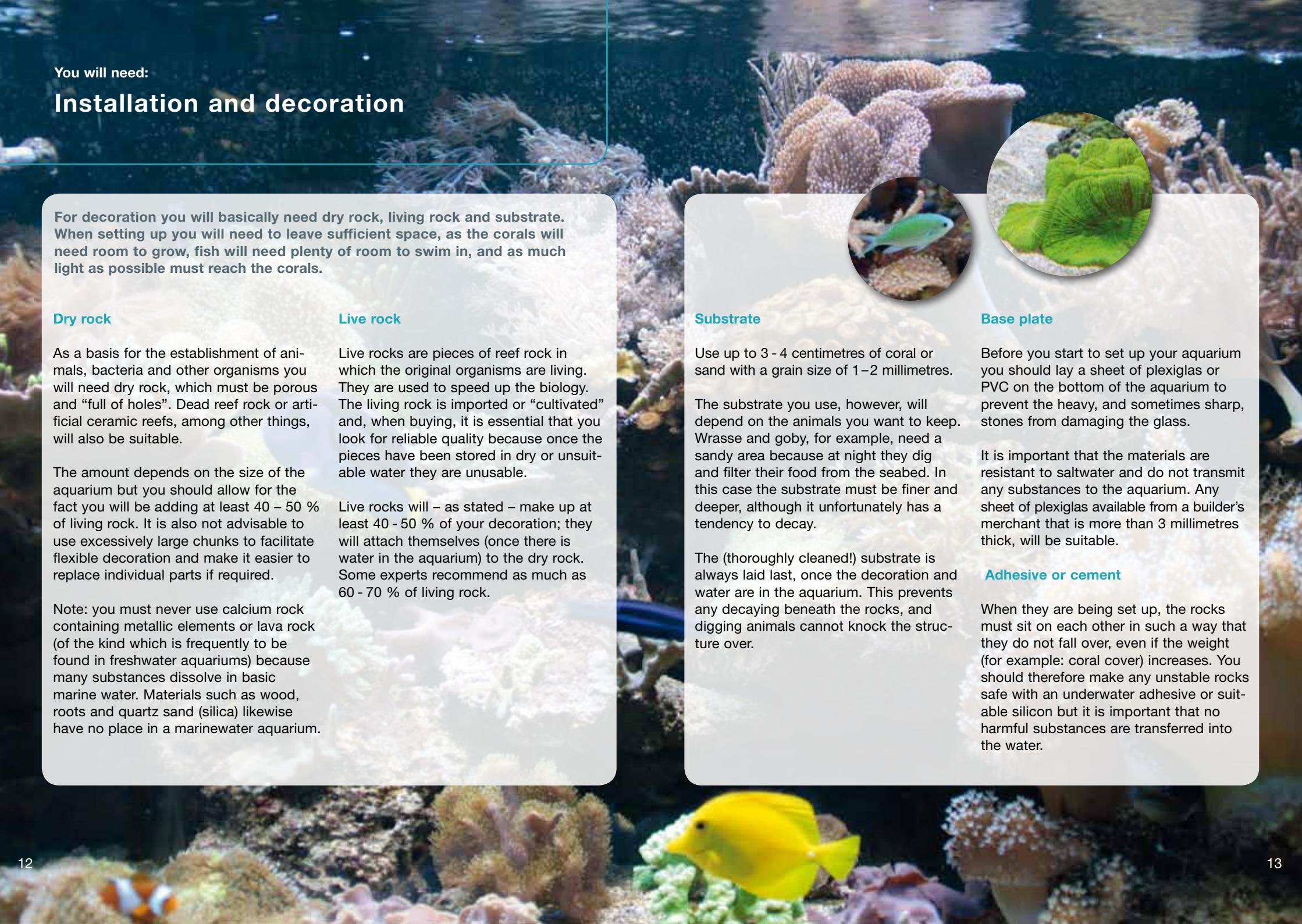
Base plate

Before you start to set up your aquarium you should lay a sheet of plexiglas or PVC on the bottom of the aquarium to prevent the heavy, and sometimes sharp, stones from damaging the glass.

It is important that the materials are resistant to saltwater and do not transmit any substances to the aquarium. Any sheet of plexiglas available from a builder's merchant that is more than 3 millimetres thick, will be suitable.

Adhesive or cement

When they are being set up, the rocks must sit on each other in such a way that they do not fall over, even if the weight (for example: coral cover) increases. You should therefore make any unstable rocks safe with an underwater adhesive or suitable silicon but it is important that no harmful substances are transferred into the water.



How to proceed – step by step

Phase 1: Preparation and set-up

1 Choosing an aquarium

Only buy a marine purpose tank; minimum size 150 litres but ideally 250 - 500 litres. Recommended: EHEIM marine water aquarium combination with overflow, filter tank in bottom cabinet, pre-installed pipes etc.

2 Choosing a position

Not in direct sunlight but in the shade, away from sources of heat, close to plug sockets and on a flat, level base.

3 Basic cleaning

Before setting up the aquarium it must be cleaned thoroughly, using only warm water, a soft sponge and no cleaning agents.

4 Base for decorations

To protect the glass base with a pane of plexiglas, silicon should be used.



5 Dry rock

Clean very thoroughly and set up decorations with caves and ledges for shade (leaving enough room for 40 – 50 % living rock and room for fish to swim in). Leave about 12 cm clear from sides so the substrate, glass etc. can be cleaned.

6 Install equipment

Fit filter tank ("filter sump") with a protein skimmer, filter mats (and/or mechanical internal filter) if required, an external filter with a variety of filter media, return pump, automatic top-up. In the tank: heater, circulation pump.

7 Prepare water

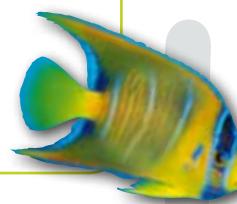
Add reverse osmosis water with about 35 g of salt per litre and mix well; after 24 hours heat to 25 °C, measure density and correct salt content if necessary (density 1.021 – 1.023 g/ml = 33 – 35.7 g/l).

8 Add water

Add externally prepared saltwater to aquarium tank. Check density and temperature again and re-adjust.

9 Substrate

Clean well, add and distribute (not underneath rocks).



10 Start up equipment

All equipment should be running, lighting on for about 2 hours, heating maintaining the water at a constant 25 °C with automatic top-up also operating (don't forget spare water!).

11 Wait a week

Occasionally remove shreds of algae from tank, gently rake substrate, check water values.

12 Live rocks

First rinse living rocks vigorously in external containers and remove dead and damaged sponges, sea squirt, larvae etc. Then place or fix rocks on or between dry decorations in areas of aquarium where water flows freely.

Phase 2: Running in your aquarium

13 Wait for two - three weeks

Adjust final light settings (8 – 10 hours main light + 2 hours dim light); allow green algae (caulerpa) to grow; test the carbonate hardness occasionally and increase if necessary; clean internal filter, clean glass.



14 From the sixth week onwards

Adjust water values (pH value, ammonium/ammonia), measure nitrite and adjust if required; if nitrite content is below 0.1 mg/l add a few algae eating snails.

15 From the third month onwards

If the water values are good: first add a few algae eating fish (surgeon fish) and invertebrates (small hermit crabs, sea urchins); destroy parasites (Aiptasia, Anemonia cf. manjano).

16 Add corals

Only when no slime remain in the water; add corals in abundance.

17 Add fish

Slowly increase the fish stock (over a period of months).

Phase 3: Caring for your aquarium

It will be at least six months before your marine water aquarium is "up and running" and only after a year or two will it be biologically stable and look wonderful, with everything growing and thriving. This is dependent on regular maintenance.

For directions for care see page 26.

Composition of your water

Osmotic water

The initial water will be tap-water. This is cleaned by a process of reverse osmosis (see Annex: Reverse osmosis page 11) to give "ultra-pure water" or "reverse osmosis water". Please test it again. There should be no dangerous residues left (nitrate max. 10 mg/l, phosphate max. 0.1 mg/l), no heavy metals, silicic acids, pesticides or medication residues.

Salt content

The salt content must be between 34 and 35.7g per litre. (Density measured at 25 °C = 1.021 – 1.023 g/ml = 33 – 35.7 g/l).

Water temperature

The temperature must be between 24 and 26 °C. No more and no less as any deviation may jeopardise the ecosystem (see heating page 10).

Trace elements

Nowadays a good brand of sea-salt will contain up to 70 main and trace elements. If you partially change your water and feed your fish on a regular basis, a second dose will not usually be necessary.

Partial change of water

The most important way of maintaining the water values in your aquarium is by partially changing the water on a regular basis (10 % at least every 14 days).



Testing the water

Your specialist aquarium dealer will have everything you need to measure water values. It is essential that you make sure the water test is suitable for marinewater.



Carbonate hardness

Carbonate hardness should be 7 – 10° KH. This means acids will be neutralised and fluctuations in pH value impeded to a certain degree (buffering capacity).

If the KH is too low you can obtain a KH-enhancing agent from your specialist aquarium dealer. Acid-forming substances must also be removed from the aquarium (metabolic waste as the result of having too many fish, decaying waste in the substrate etc.). The addition of calcium can also help. Excessive KH will not usually occur unless you have over compensated when trying to increase the values. You will then have to change a greater proportion of the water.

Calcium

Natural marine water has a calcium concentration of 400 – 450 mg/l. If it drops below 400 mg/l you should add a suitable calcium preparation. If there are hard corals to be nurtured, it is essential that you install a calcium reactor.

Magnesium

Magnesium is important for the formation of calcium. The natural figure for magnesium is about 1350 mg/l but a shortage of magnesium may cause a breakdown in the growth of calcareous algae, allowing thread algae to flourish. With suitable preparations you can administer a second dose.

Nitrite, nitrate, phosphate

These substances are generated by excreta (ammonium/ammonia), dead organisms, decomposition products, food remnants etc. These are largely removed from the water by the protein skimmer and, after a short period, values which exhibit a slight increase will often stabilise. Cleanliness and regular, partially water changes will help but in an emergency, specialised filter media (e.g. EHEIM phosphate out) or specialised preparations should be used. You should seek the advice of your specialist aquarium dealer regarding this.



Maintaining water values at the optimum level

Basically, you will only need one protein skimmer and one mechanical filter for your marine water aquarium. The process of biological filtration will be assumed by the living rocks and/or organisms in the aquarium. To adjust water values, however, you may have to use specific media.



The protein skimmer

Immediately removes organic and inorganic protein compounds which are generated by excreta, food remnants, dead organisms etc., and also removes fine particles of dirt. This prevents the protein compounds from being broken down in the aquarium by bacteria and polluting the water with harmful chemicals. It also enriches the water with oxygen and carbon dioxide.



The mechanical filter

This consists simply of a filter mat or a filter fleece that holds back particles of dirt and suspended matter.

The additional external filter

An external filter (example: EHEIM professionel 3) with a variety of media baskets that can be set up with filter pads and can also be filled with biological, adsorbent (activated carbon) or chemical filter media, as appropriate. (Caution – use carbon for no longer than necessary!)



Water circulation

From the aquarium, the water flows (in the case of an EHEIM marine water aquarium – through a patented, silent overflow shaft) into the filter tank ("filter sump"), where it is fed from the intake chamber with the protein skimmer, into the filter chamber with the mechanical filter (or additional external filter) and then into the collection chamber housing a return pump.



Optimum water values

| | |
|---------------------------|------------------------------------------------------------|
| Temperature | 24 – 26 °C |
| Density (salt-content) | 1.021 – 1.023 g/ml (25 °C) |
| pH value | 7.8 – 8.5 <small>(depending on the time of day)</small> |
| Carbonate hardness | 7 – 10 °KH |
| Calcium | 420 mg/l |
| Magnesium | 1350 mg/l |
| Nitrite | < 0.1 mg/l |
| Nitrate | < 10 mg/l |
| Phosphate | < 0.1 mg/l |

Providing good light

In addition to healthy water, correct lighting is the most important thing for your marine water aquarium, as life can only thrive when it is present. At the same time, fish need less light than corals and plankton.

Light intensity

The light must be more intense than in a freshwater aquarium. Only then will it be able to penetrate as far as the symbiotic algae (zooxanthellae), which live in the tissue of, and feed, stony corals, anemones, etc. New T5 fluorescent tubes and LED lamps are, more and more often, replacing the frequently-used HQI lamps.

Light spectrum

The colour spectrum of the light must be accurately balanced in the marine water aquarium, with the blue element predominating (from 10 000 Kelvin). The ideal solution is a combination of the daylight spectrum (white) and deep blue light. The light colour "red" is not suitable for marine water aquariums.

To reinforce the natural fluorescence of corals you can also make use of an actinic light.



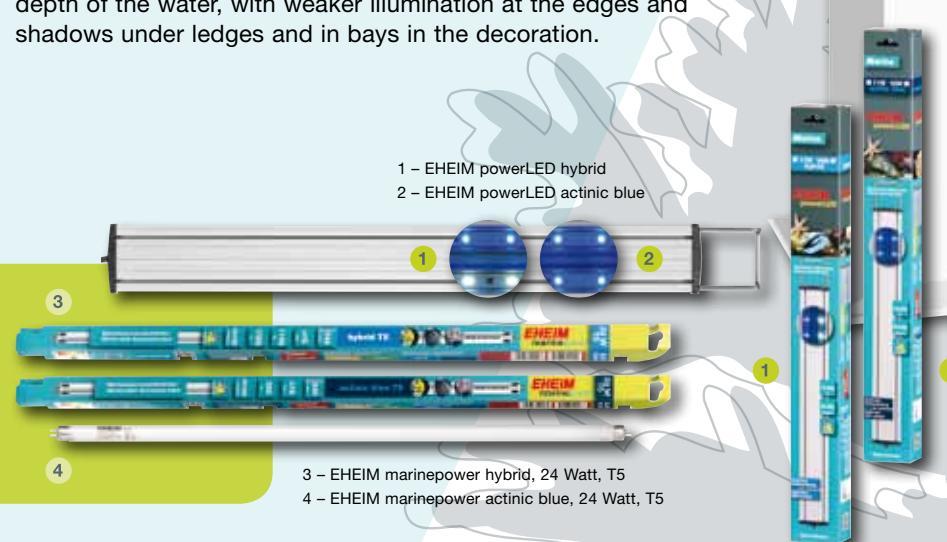
Lighting periods

Basically, full light should be switched on for 8 – 10 hours, plus one hour of dim light in the morning and another in the evening. You can simulate sunrise and sunset by switching light sources on or off, one by one or by means of a dimmer switch (e.g. in the case of LED lamps).

If your aquarium is lit for a longer period in the evening, simply switch the light on later in the morning (timer switch). There should be no breaks during the light phase as is often recommended in the case of freshwater aquaria.

Light zones

As in nature, you should create strong, average and weak lights zones, because different creatures (corals and sponges) need different amounts of light. Gradation will be produced by the depth of the water, with weaker illumination at the edges and shadows under ledges and in bays in the decoration.



How to stock your aquarium

Once your aquarium has been run in (minimum of 3 months) you can gradually add to its population with corals, other invertebrates and fish. When making your choice, you should remember that not all animals are compatible with each other (your specialist aquarium dealer will know) and make sure that you only buy creatures which are 100% healthy.

Corals

Basically, you should only add light-dependent (zooxanthellate) corals. These include – in each case with some sub-species:

- large and small-polyp stony corals
- soft corals
- leather corals
- horn corals
- zoo antuns
- etc.

You can safely populate your aquarium with an abundance of these sessile invertebrates. In symbiosis with the zooxanthellae, they will clean the water and stabilise the environment – rather as plants do in a freshwater aquarium.



Other invertebrates

These include a wide variety of animals. Specialists recommend:

- feather-duster worms
- sponges
- starfish
- shrimps
- hermit crabs
- sea urchins
- snails
- etc.

As a rule these invertebrates do not need any additional food. In a healthy environment they will find enough food and also make use of leftovers and “clean up” after themselves. The size of the population should be self-regulating.



Fish

Although fish like living in large communities on coral reefs, you should only introduce a few initially. Slowly (over the course of a few months) you will be able to increase the stock but you should never add too many at once or the water values will deteriorate.



The following are suitable for beginners, for example:

- different types of perch: damsels, chromis, cardinals
- surgeon fish
- anemone fish
- blenny
- goby
- dragonet
- dwarf angel

When making your purchase you should make absolutely sure that the fish are healthy, happy and well-fed. Round bellies without spots and an absence of protruding scales are good signs.

Transferring fish and other stock to your aquarium

All newcomers must be slowly introduced into the new aquarium environment. For that reason:

- Do not transfer them direct from the transport bag into the aquarium, but very slowly replace the water in the transport bag with water from the aquarium (2–3 hours).
- Whilst doing this, ensure that the temperature is the same.
- All animals (especially corals) must always be completely immersed in water.
- Do not pour corals into the aquarium but remove them carefully from the transport bag in the aquarium, under water, and place them where intended.
- Fish may be transferred using a fish-net.



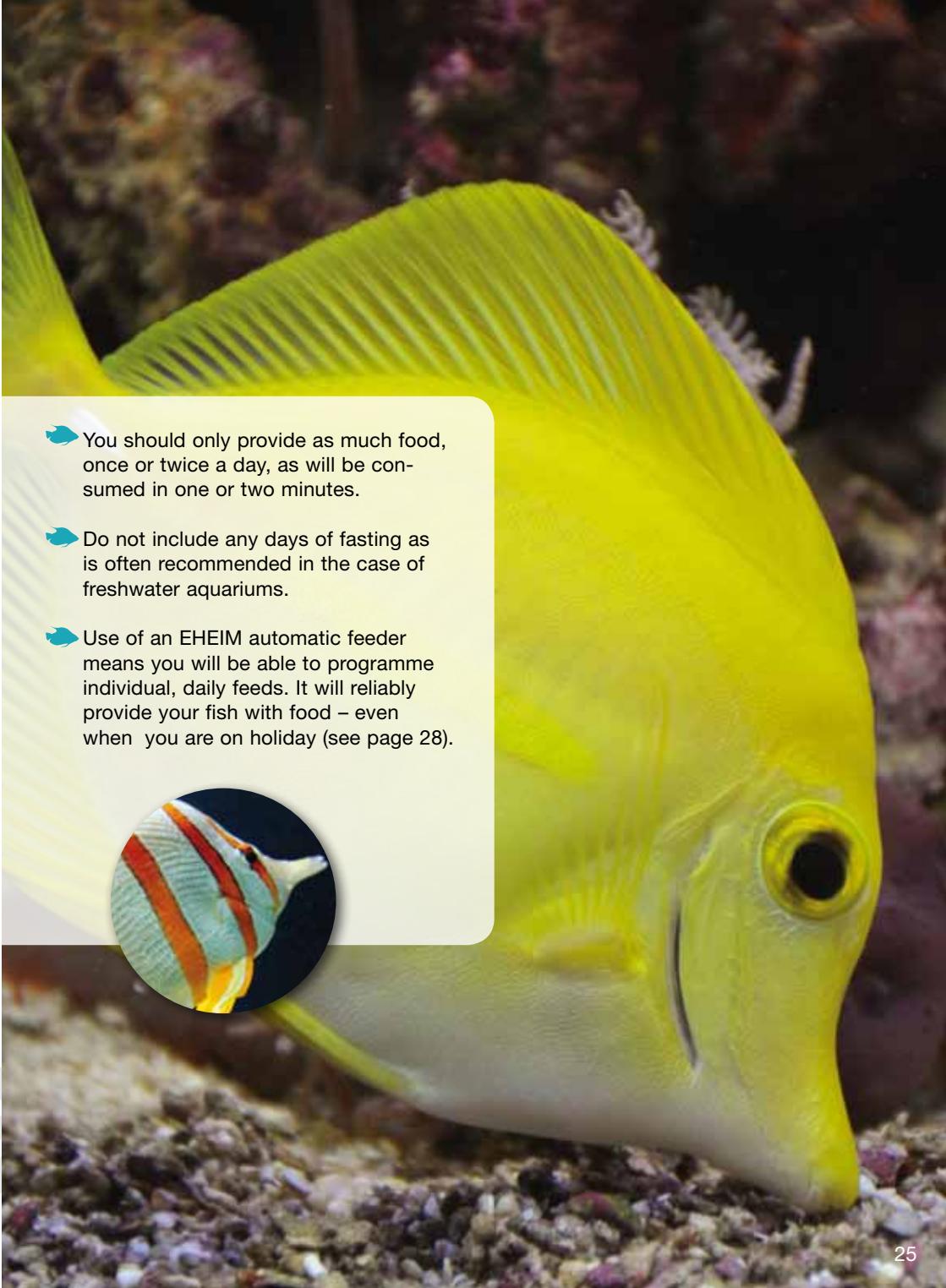
The right way to feed your fish

Your fish will need vitamins, minerals, protein, carbohydrates, roughage and fat. These are all provided by good fish foods as dry or frozen food. Do not use live food from freshwater cultures (mosquito larvae, fleas, shrimps, etc.).

- ➲ Every species of fish has specific needs and preferences that you should acquaint yourself with when you buy your fish. At first, you should concentrate on species for which you do not have to satisfy any "special requirements" and which can be fed the same dry food. This will make things a bit easier for you – even when you are on holiday.
- ➲ Flaked and granulated food are particularly suitable as it will be consumed on the surface of the water and will also sink to the bottom. If you are using an EHEIM feeding station, you will lose considerably less food as the food will sink and not get into the overflow shaft.
- ➲ Quality is important, because food which is not digested properly will increase the level of nitrates in the water due to the increase of fish excreta and its waste remnants.
- ➲ If you use frozen food, it should be defrosted and rinsed vigorously in running water to wash off any nitrogenous compounds and phosphates.
- ➲ In the case of plant-eaters (herbivores, such as surgeon fish) you can occasionally – if there is not enough algae in the aquarium – enrich their diet with either lettuce or dandelion leaves. But be careful: vegetables must not have been sprayed and must first be washed thoroughly. It is preferable to buy suitable algae preparations.



EHEIM feeding station – the added extra for improving life in your aquarium. The aquarium water will stay cleaner for longer and you can keep an eye on all of your fish.



Keeping your aquarium in good shape

After the running-in phase (see page 15), from the third month onwards, your marine water aquarium will slowly begin to develop as it should: into a truly wondrous and colourful underwater landscape and a biologically stable ecosystem. This may take as long as another year. During this period in particular, but also in the future, it will require your care and attention.

You should do the following:

• At all times

Remove dead organisms and visible waste materials immediately. Sick fish should be promptly treated in a quarantine tank.

• Every day

Feed fish once or twice – but only as much as can be consumed in 1–2 minutes (see automatic feeder page 28); evaporated water (reverse osmosis water) should be refilled (preferably using an automatic top-up – see page 9); clean mechanical filtration; check all equipment is in good working order; measure temperature of water.

• Once a week

Clean glass; vacuum up waste; clean skimmer (preferably more often); add trace elements as required; fill evaporated water top-up tank with water (freshwater).

• Every other week

Partially change water (10 %); check water values (salt content, carbonate hardness, pH value, calcium and magnesium content).

• Once a month

Check short-term activated carbon filtration* for (or CDOM – yellow coloured dissolved organic matter); check nitrate and phosphate levels; wipe salt off light bulbs and reflectors (using water).

Important note in the case of activated carbon filtration

* add about 15 g of activated carbon for each 100 litres of water to filter circulation (filter canister) for 24 hours. Then remove. This avoids any harm to the ecosystem.



You will also need

To care for your marine water aquarium and to make your task easier, you should provide yourself with a few useful extras. Some of these you will be able to acquire gradually.

You should definitely have:

- A clean bucket – reserved for your aquarium and banned from other cleaning jobs around the house
- A largish container (drum, bucket), in which you can put the saltwater for the initial filling and for partial water changes
- Glass wiper/glass cleaner (EHEIM powerCleaner)
- Suction hose (at least 1.5 – 2 metres long, diameter 15 – 20 mm) for partially changing the water – or preferably the EHEIM gravel cleaning set – which will also be helpful when doing a water change (see description)
- A densimeter (see page 10)
- Ideally, and most importantly, test kits and equipment for testing the water

You could also buy the following:

- An EHEIM automatic feeder, for regular feeding even if you are on holiday,
- A EHEIM feeding station (page 24)
- EHEIM plant tongs so that you can reach and remove dead matter without disturbing the fish unnecessarily,
- EHEIM gravel cleaning set, to remove waste and to make it easier to partially change the water,
- The EHEIM Quick vacpro, for removing waste without churning up the substrate
- A EHEIM fish-net and a EHEIM thermometer with suction pads
- A EHEIM MultiBox



You will also need



EHEIM autofeeder/
TWINfeeder



EHEIM
Gravel cleaning set



EHEIM streamON 3000

EHEIM streamON+ 4000
with magnet bracket

EHEIM autofeeder/TWINfeeder

The EHEIM automatic feeder (two models are available – the autofeeder and the TWINfeeder) will supply your fish with different kinds of food – in the right quantity – at different times of day. You can programme individual daily feeds and they can also be used for reliable feeding when you are on holiday.

EHEIM gravel cleaning set (can also be used for partially changing the water)

This allows you to combine partially changing the water with cleaning the substrate. The integrated suction aid spares you the task of sucking on the pipe with your mouth, the Quick-Stop will immediately interrupt the flow of water and the triangular shape also allows you to get into corners.

EHEIM QuickVacpro

(Battery-operated) – for intensive but careful cleaning of the substrate. It can be fully immersed in water and, at 60 cm in length, it is also effective in deeper aquariums. An easy-to-remove filter container in the unit collects the dirt and immediately feeds the water back into the aquarium.

EHEIM streamON und streamON+

In a marine aquarium the streaming pump serves to stimulate the natural and vital currents in the coral reef. You can position them vertically or horizontally and turn them up to 180°.

EHEIM SKIMmarine 800

The new protein skimmer from EHEIM offers everything, that marine fishkeepers desire. EHEIM SKIMmarine 800 runs very quietly, has a better than normal skimming performance and is energy efficient. It is very easy to clean, you can precisely control the water through-flow and air intake and you get measurably better water values.

EHEIM skim350

The surface skimmer, for removing scum (surface film produced by the remains of food and other waste products). Essential when the scum isn't drawn into the overflow shaft and so cannot be absorbed by the protein skimmer.

EHEIM reflexUV

With the UV steriliser, for reducing the germ load and the risk of infection. It can be used to sterilise the clean water that is then pumped back to the aquarium.

EHEIM powerCleaner

With this battery-powered glass scraper you can remove dirt, calcium and salt effortlessly from the aquarium glass; it is supplied with an extending handle and optional LED light.

EHEIM MultiBox

Practical, hook on container for maintenance work and aquascaping. Keeping everything you need at your fingertips. Compartment for acclimatising tank inhabitants to a different or new environment. The box can be filled with up to 2.5 l of water.



EHEIM skim350

EHEIM SKIMmarine 800



EHEIM
reflexUV



EHEIM
powerCleaner



EHEIM
MultiBox

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Do you need advice and help?

If you have questions, go and see your specialist aquatics retailer. Fishkeepers' clubs are also useful.

You can find a specialist aquatic retailer by visiting our website

www.eheim.de

and following the links.

You will also find there a lot more information about aquariums, technology, fish, plants etc.

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Quality has a good name.

EHEIM

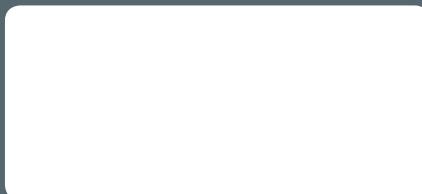
With this Guide, EHEIM examines the complex topic of marine water and reef aquariums. Interested beginners in particular are given a quick overview, taught the essential basics and provided with step-by-step instructions. The essentials are summarised in concise terms, and useful tips provided along with a solid basis for starting out on a demanding and fascinating hobby.



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