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Tetra

Marine Aquarium Care

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Caring for your marine aquarium

A healthy marine aquarium is the ultimate focal point for any room, and provides a fascinating insight into the rich and colourful life found around coral reefs. With the right equipment and a little time spent on providing the correct care, there's never been a better time to own a marine aquarium. Thanks to advances in product quality and our understanding of the needs of marine fish and corals, it is now much simpler to provide the right environment, and own a truly stunning aquarium that will provide years of enjoyment.

The Tetra Marine range is based on rigorous testing at our industry-leading laboratories, and is designed to make it easy for you to meet the specific needs of marine fish, corals, and other invertebrates. We can also support you throughout the process of setting up and caring for your aquarium – visit our website at www.tetra.net to get all the help and advice you need, or to contact one of our experts.

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Before you start

Before buying your marine aquarium, it is important to speak with the trained staff at your aquatics store about what you will need, and how to set the aquarium up. Getting this right will make the process much simpler, and avoid any problems caused by rushing ahead unprepared. The experts at your local aquatics store will help you select the right equipment and livestock to suit your experience and budget. However, the following are some general considerations:

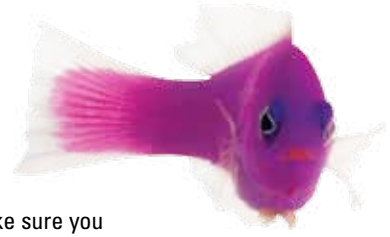
Choosing an aquarium

- Make sure the aquarium is suitable for saltwater – a purpose-built, 'all-in-one' system is often the easiest, as it should contain appropriate and correctly sized equipment.
- Think about the size of the aquarium carefully – larger ones will allow you to house more livestock, create interesting displays, and normally have more stable water quality. However, they will be more expensive to set up initially, and require more room. Although smaller 'nano reefs' have become popular recently, they can be very challenging to look after, so think carefully before buying one.

Positioning the aquarium

Think about where you are going to put the aquarium in your home, keeping the following in mind:

- **Weight** – the combination of water, glass, rocks, and other decor means that the aquarium will be very heavy. A strong floor is essential!
- **Water** – there is always the chance of splashing during maintenance, so avoid putting the aquarium too close to electrical sockets and sensitive surfaces etc.
- **Temperature** – try to keep the aquarium away from direct sources of cold or heat (e.g. next to radiators), as this helps keep the water temperature stable.
- **Natural light** – avoid direct sunlight, in order to reduce nuisance algae.
- **Electricity** – you will need a power source for the equipment, but as mentioned above, it's not wise to have electrical sockets right by the aquarium.
- **Stand** – ideally, buy a bespoke stand for the aquarium. If this is not possible, makes sure you choose one that is strong enough, and check whether or not the aquarium needs resting on polystyrene.
- **Ease of access** – make sure you can get to the aquarium and its equipment for any maintenance.
- **Viewing pleasure** – last of all, make sure you put the aquarium in a place where you can enjoy it! After all, this is the main reason for having it.



How many fish can I keep?

Marine fish require better water quality than freshwater ones. A key way to ensure this is by sticking to recommended stocking levels of fish. Give this some thought before choosing your aquarium, as if there are particular fish you want, you'll need one that's an appropriate size.

For aquariums that only contain fish, you can keep approximately 2.5cm of fish per 10 litres. For example, in a 120 litre aquarium you can have fish totalling 30cm in length - equivalent to around 5 or 6 adult Clown Fish.

For aquariums containing fish and corals ('reef' systems), you can keep approximately 1.5cm of fish per 10 litres. For example, in a 120 litre aquarium you can have fish totalling 18cm in length - equivalent to around 3 Clown Fish.

Equipment

At first glance, the choice of equipment for marine aquariums can be confusing. That's because there are many tried and tested ways to create and maintain the right environment for marine fish, and very complex systems containing sensitive species require sophisticated equipment. However, if like most people you are looking for a basic reef aquarium, with a mix of less demanding fish and corals, your requirements will be much more straightforward.

The easiest option is to buy an all-in-one system, so you don't need to worry about choosing individual pieces of equipment. Alternatively, you might find a stand-alone aquarium you really like, and need to get everything separately. Whichever approach you take, make sure you get the help and advice of your aquatics store. It's also important to know what each piece of equipment is for:

Tetra's range of aquarium equipment is suitable for both freshwater and marine aquariums, and offers the perfect combination of high performance and ease-of-use. The range includes **Tetra EX external filters, Tetra APS air-pumps,** and **Tetra HT heaters.**

Filtration

In the ocean, large volumes of water and efficient mixing by currents and wave action, dilute and remove waste products, keeping the water extremely clean and healthy. In an aquarium this doesn't happen, yet waste still needs to be managed to prevent it polluting the water and harming its inhabitants. To achieve this, your aquarium should contain the following:

1. **Live rock** to help control ammonia, nitrite, and nitrate. It is also used to decorate the aquarium and provide homes and attachment points for fish, corals, invertebrates and other life. Because it is highly porous, it can hold huge quantities of beneficial micro-organisms which help to maintain good water quality. Although it may seem expensive good quality live rock is highly recommended for any marine aquarium. If possible, always buy live rock that has been 'cured' to remove any dead organic material, as otherwise it may pollute the water when it is first added.

2. An **external filter system**, such as the **Tetra EX** range, to offer additional filtration, including the removal of solid waste and the biological breakdown of harmful ammonia and nitrite. This can also be used to create beneficial water movement in the aquarium.

3. A **protein skimmer** to help control ammonia, nitrite, nitrate and phosphate; increase oxygen; and to aid overall water clarity and quality. It works by injecting fine bubbles into the water, which trap waste products and remove them as foam.

Lighting

Lighting is important in all marine aquariums, to allow proper viewing and to recreate the shimmering beauty of a coral reef. However, in aquariums containing corals, good quality lighting is essential, as many of them rely on beneficial algae living in their tissues to provide them with food. These algae require the right wavelength and strength of light to create this food, so you will need to speak to your aquatics store about the right system for your aquarium. There are plenty of options available, including tubes, metal halides, and newer low energy LED systems. The right one for you will depend on the species you want to keep, how you want the aquarium to look, initial cost, and running costs.

Temperature control

Your marine aquarium needs to have a stable temperature of 26 - 27°C. A good quality aquarium heater, such as the Tetra HT range, will warm the water to the required temperature and keep it there.

If over-heating of the water becomes a real problem in the summer, you may need to fit an aquarium chiller. Heat from some lighting systems can also contribute to over-heating, requiring additional fans to help remove the warm air beneath them. Your aquatics store can advise you further on this.

Water movement

Water movement is important for bringing microscopic food particles to corals and other invertebrates, maintaining oxygen levels, and also for aiding the removal of waste products by live rock. The flow generated by your filter and protein skimmer might be sufficient, although in larger aquariums some additional water movement will almost certainly be required. This is easily achieved with small water pumps and powerheads, which your aquatics store can recommend to you.

Essential equipment check-list

- External filter system
- Live rock
- Protein skimmer
- Suitable marine lighting
- Powerheads / water pumps (if extra water movement is needed)
- Heater

Creating healthy seawater

Marine fish, corals and invertebrates need water that has the correct salinity (see section on water quality for more information). Learning how to create healthy seawater is therefore central to you having a successful, healthy marine aquarium.

What is seawater?

Seawater is more than just water with salt in it. Whereas the salt we are most familiar with – table salt – consists of sodium and chloride, natural seawater has a huge number of different elements dissolved in it. Many of these are essential for marine life, and must be present in your aquarium at the correct levels. For this reason you will need to use a proper marine salt for making seawater for your aquarium.

Tetra Marine SeaSalt is a high quality salt mix, containing everything needed by marine fish and corals. It is designed to dissolve quickly, and makes creating healthy seawater easy.

The correct salinity

Natural seawater has an average salinity of 35ppt (parts per thousand). This basically means that in every 1,000 grams of seawater, there are 965 grams of water and 35 grams of salt. Unless your aquatics store advises otherwise, this is therefore the salinity that your aquarium should have.

Because salinity is so important, you need to be able to measure it. This is important when mixing new seawater, and when testing the water in the aquarium.

Because it is not easy to directly measure salinity, it is done indirectly using ***specific gravity***. This refers to the relative density of the water, which can then be used to accurately estimate salinity.

There are various ways to measure specific gravity, and you should read the instructions with any testing equipment carefully. One of the simplest ways is with a Tetra Hydrometer, which is designed to be used across a wide temperature range (20 – 29°C) without calibration. Simply fill the hydrometer with the seawater, tap it to remove any bubbles, and take the reading that corresponds to the position of the swing arm. A specific gravity reading of 1.026 corresponds to a salinity of 35ppt when used at a temperature of 20-29°C.

Source water

In order to create seawater, you need to have a starting water source. Tap water is satisfactory for fish-only aquariums, but it must be treated with **Tetra Marine AquaSafe** to remove harmful chlorine and heavy metals.

Alternatively, 'RO' water is becoming increasingly popular. This is water that has been filtered through a ***reverse osmosis*** unit, effectively purifying it. The benefit of using pure water is that the quality of the final seawater is not affected by the chemical make-up of the tap water. It is the best option for reef aquariums, containing corals and other invertebrates. Many aquatics stores sell RO water, removing the need for you to have your own RO unit

Specific gravity and salinity

Equipment for measuring specific gravity may vary in how the readings correspond to salinity. This makes it very important to read the instructions carefully, and seek advice if in doubt.

Mixing seawater

Following the right process for mixing new seawater is important, if you are to provide the best possible environment for your fish and corals. To do the job properly, you ideally need a good quality food-grade plastic container, an air-pump, and a **Tetra Hydrometer.**

1. When first setting up, you can prepare the seawater in the aquarium itself. After this, you will need to use the plastic container.
2. If using tap water, add **Tetra Marine AquaSafe** to remove any harmful chemicals it contains.
3. Warm the water to the same temperature as the aquarium (i.e. 26-27°C in most cases). The easiest way is by using an aquarium heater, such as the **Tetra HT**, as you can simply set the desired temperature and leave it.
4. Work out approximately how much salt you need to achieve a salinity of 35ppt. Using T**etra Marine SeaSalt**, you will require approximately 415 grams of salt to make every 10 litres of water. Add the salt to the container.
5. Either stir the water to begin dissolving the salt, or ideally leave an airstone running in the bucket to 'stir' the water for you. A small **Tetra APS** pump and airstone would be ideal.
6. Leave the water for 24hrs, to allow the salt to dissolve fully at the correct temperature. Test the specific gravity / salinity, and make any necessary adjustments by either adding more salt if it is too low; or adding more freshwater if it is too high.
7. Once you have the correct specific gravity / salinity, you can add the seawater to the aquarium. It is good practice to test the specific gravity of the whole aquarium half an hour or so after this.

Stocking your aquarium

There are many different ways to stock a marine aquarium successfully, and your aquatics store will be able to give you specific advice. It is important to adhere to this, as rushing the process can lead to water quality problems and sick fish. If in doubt, the following guidelines are suitable for most aquariums:

Step 1: Once the aquarium is filled, add the equipment and substrate. Turn everything on, and leave it running for a few days to warm up. This also gives you a chance to check everything is working.

Step 2: If everything is okay, the next step is to add the live rock. Because it can contain organic material, it might cause levels of ammonia and nitrite to rise. The water should be tested for these every 2 days with **TetraTest** test kits. If they do rise, wait until they fall to zero before doing anything else. Adding **Tetra Marine SafeStart** will speed up this process, by adding ammonia and nitrite-removing bacteria.

Step 3: Leave the aquarium and live rock to establish for at least a couple of weeks. This allows any natural life present on the rock to begin to grow, before anything is added that might eat it. Watch it closely, as all sorts of fascinating creatures may begin to appear! Then, if ammonia and nitrite are zero, you can add the first livestock. These should consist of a mixture of grazers and scavengers – animals that will help to keep the aquarium clean and tidy. For example, algae-eating snails, hermit crabs, and shrimp. Remember to add **Tetra Marine SafeStart** to increase numbers of beneficial bacteria, as this will help to remove the extra waste they will produce.

Suggested marine fish for beginners

Clownfish, *(Amphiprion species).*
Choose tank-raised if possible

Damselfish such the Yellow Tailed Blue *(Chrysiptera parasema)* and Green Chromis *(Chromis viridis)*

Surgeonfish such as the Yellow Tang *(Zebrasoma flavescens)* and the Purple Tang *(Z. xanthurum)*

Dwarf angelfishes such as the Coral Beauty *(Centropyge bispinosa)* or Flame Angel *(C. loricula)*

Hawkfishes such as the Flame Hawkfish *(Neocirrhites armatus)* or the Longsnout Hawkfish *(Oxycirrhites typus)*

Grammas such as the Royal Gramma *(Gramma loreto)* or the Blackcap *(G. melacara)*

Dottybacks such as the Orchid *(Pseudochromis fridmani)* or Magenta Dottyback *(P. porphyreus)*

Dartfishes such as the Firefish *(Nematoeleotris magnifica)* or Scissortail Dartfish *(Ptereleotris evides)*

Midas Blenny *(Ecsenius midas)*

Neon Goby *(Gobiosoma oceanopus)*

Golden rule of stocking

The biggest risk with a new aquarium is water pollution caused through adding livestock too quickly. This can lead to sick fish, algae, and other problems. Take your time, enjoy each stage, and most importantly keep a check on water quality. Before adding any new livestock, it is crucial to check that ammonia and nitrite are zero. Ideally, you should also be checking for nitrate, calcium, pH and KH. You can do all of this with just two test kits – a **TetraTest Ammonia** liquid kit, and a **Tetra Marine Test 5in1** dip test. Ammonia and nitrite should also be checked in the days following new introductions, to ensure the system is coping. Adding **Tetra Marine SafeStart** at the same time as adding new fish or corals will help to prevent any problems.

Step 4: Assuming the water quality is still good, after a further week or two you can begin to add corals. Work closely with your aquatics store to choose hardy species that will thrive in a new reef aquarium, and that will be compatible with any livestock you are planning to add later on. Only add one or two at a time, to avoid polluting the water, and to allow the aquarium to 'mature' and generate sufficient natural food for them.

Step 5: Once you have added the majority of your corals, you can begin to introduce fish. As with corals, work with your aquatics store to choose suitable and compatible species. Do so slowly, testing the water each time and adding **Tetra Marine SafeStart**. You may also want to add more grazers and scavengers, to cope with the extra waste being generated as the aquarium fills up with life.

Step 6: Congratulations! If you've stocked the aquarium carefully, according to the advice given by your aquatics store, you should have a healthy marine aquarium buzzing with life.

Tetra Marine SafeStart

Marine aquariums depend on beneficial 'nitrifying' bacteria to remove the harmful ammonia that fish and other livestock produce. These bacteria turn it into nitrite, and then into nitrate. Whenever new livestock is added, extra ammonia is produced, which means more bacteria are needed. During the time it takes for them to grow, ammonia and nitrite may rise to dangerous levels. **Tetra Marine SafeStart** prevents this by adding the bacteria to the aquarium straight away, and should therefore be used each time you add new livestock.

Keeping the water healthy

Once you have created and stocked your aquarium, you will want to keep it in good condition. This involves a few simple tasks, and use of the right care products, to counter the changes that naturally occur to water over time:

- The accumulation of nitrate and phosphate, which can harm sensitive species and encourage nuisance algae.
- The loss of important substances from the water, such as calcium, bicarbonate, vitamins, and trace elements.

Clear, healthy water

Follow these tips to maintain healthy conditions for your fish and corals:

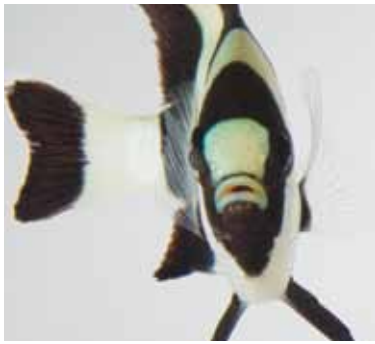
- Change 10 – 20% of the water in your aquarium every 1 – 2 weeks, using seawater mixed to the correct salinity. **Tetra Marine SeaSalt** adds all the elements needed by fish and corals.
- To top up essential substances, add **Tetra Marine MineralMix** and **Tetra Marine SafeBalance** weekly. These two supplements replace calcium, magnesium, strontium, iodine, bicarbonates, vitamins, and trace elements. They are especially important in reef aquariums, with fish and corals.
- If you need to top your aquarium up, only add freshwater. Salts do not evaporate, and will become more concentrated if you use seawater for top-ups.
- Test the water weekly for specific gravity / salinity, ammonia, nitrite, nitrate, pH, KH (bicarbonates), and calcium. This can be done quickly and simply with a **TetraTest Ammonia** kit, and a **Tetra Marine Test 5in1** dip strip.

Aquarium care

In addition to keeping the water itself healthy, there are a couple of other simple tasks that will keep the aquarium in top condition:

- Remove solid waste as and when needed. A **Tetra GC Gravel Cleaner** can be used for removing it from the aquarium, whilst filters can be cleaned according to their instructions.
- If algae starts to grow on the glass, you can remove it quickly and easily with a **Tetra GS Glass Scraper**.
- White salt deposits may appear around the top of the aquarium, where saltwater has evaporated. These can be cleaned away with **Tetra EasyWipes**, which contain a harmless natural cleaning agent.
- Maintain any equipment according to the instructions. For example, filter sponges will need occasional cleaning / replacement, and the foam produced by the protein skimmer needs removing on a regular basis.
- Depending on the lighting system you have, the bulbs may need replacing at set intervals. Even if they are still working, the quality of light deteriorates over time and may not be sufficient to keep the corals healthy.

If you have to do a lot of maintenance on your aquarium, speak with your aquatics store to see if they can help you. For example, changes to your feeding regime, stocking level, or equipment, could make a big difference.



Feeding

Having provided them with the right environment, you then need to give your fish a balanced diet to keep them healthy. Fishes from coral reefs are very diverse, and have different dietary and physical feeding requirements. Therefore, always find out about these before you buy a particular species. Those that are more demanding are best avoided if you want a marine aquarium that is easy to care for. Here are some things to consider:

- Will the fish adapt to dry foods, or will you have to feed fresh or frozen?
- Will the fish eat other aquarium inhabitants, such as corals or shrimp?
- Does the fish feed on the substrate, at the surface, or in mid-water?
- Is the fish a 'grazer', i.e. will it feed slowly over a long period of time?
- Is the fish an 'active' feeder, i.e. can it compete with the other fish to get enough food at feeding time?
- Does the fish have specialist dietary requirements, such as needing a lot of algae matter in its diet? Will these change as it matures?

Knowing the answers to these questions will help you to provide the most appropriate diet for your fish. By finding out first, you will avoid ending up with a fish that is too difficult or expensive to care for properly.

Feeding regime

Meal frequency, and the amount of food you feed, will also depend on the mix of fish that you have. However, in general terms, 'active' feeders can be feed several small meals a day, whereas 'grazers' are likely to need a more permanent supply of food. When feeding active species, make sure you only feed as much as they can eat within a few minutes, 2 to 3 times a day.

Types of food

There are various types of food available for marine fish. The easiest option is a complete dry food, such as a flake or granule. These have been formulated to contain everything needed by the fish, and offer a balanced diet that is very easy to feed.

However, not all marine fish will accept a dry diet, and traditionally this has meant having to feed fresh or frozen foods, such as lettuce, algae, krill, brine shrimp, etc. Because of their more natural look, taste, and texture, these are generally well accepted, even by fussier species. The only downside to these foods is that they are messier and more difficult to handle, and do not contain a complete balance of nutrients.

A better alternative is Tetra Marine Gel foods, which contain natural ingredients in an edible, nutrient-rich gel. These are cleaner to feed and provide more nutrition than frozen foods.

Tetra Marine complete diets

Tetra's complete foods have been formulated and tested to provide marine fish with a balanced, healthy diet. They contain all the nutrients they need, and are highly digestible to reduce waste and help maintain good water quality. They also include marine ingredients such as crustaceans, fish oil, algae, and seaweed. They are ideal for active species that will feed on dry foods.

- **Tetra Marine Flakes** for health, colour and vitality.
- **Tetra Marine Crisps** offer less waste and better nutrition compared to flakes.
- **Tetra Marine Granules** for mid-water and substrate feeders.

Tetra Marine Gel foods

Tetra's patented gel technology allows natural foods to be preserved in a nutrient-enriched gel. This means they don't need freezing, making them much cleaner and easier to handle. Plus, the extra nutrients make them more nutritious compared to frozen foods.

They are available in two formats – **sachets** for active feeders, and **24hr feeding blocks** for grazers. There are also five different varieties to choose from, to give your fish a varied and appropriate diet:

- **Tetra Marine KrillGel** – Krill in a nutrient-enriched gel
- **Tetra Marine MixGel** – Krill and Brine Shrimp in a nutrient-enriched gel
- **Tetra Marine AlgaeGel** – Nori algae in a nutrient-enriched gel
- **Tetra Marine MixBlock** – Brine Shrimp, Krill and Cyclops in a nutrient-enriched gel block
- **Tetra Marine MixGel** – Nori algae in a nutrient-enriched gel block

- Great taste & acceptance
- Better nutrition
- No need to freeze
- No mess and no handling
- For active feeders and grazers

Water quality

In addition to creating and maintaining the correct salinity, there are some other important substances that affect the health of marine fish and corals. If you follow the advice in this brochure and from your aquatics store, you shouldn't encounter many problems with these. However, it's still worth knowing about them, and what to do if levels become unhealthy.

Ammonia ($NH_{3/4}^+$)

Ammonia is a waste product excreted by fish into the water. It is very toxic, with even moderate levels causing stress and ill-health. In the wild, ammonia is diluted by large volumes of water, but in an aquarium levels can accumulate rapidly.

Fortunately, naturally occurring ***nitrifying bacteria*** remove ammonia, turning it into nitrite, and then into nitrate. These bacteria require a high surface area to grow on, with a rich supply of nutrients and oxygen. This is the job of the filter, which contains ***biological media*** designed to provide a home for them. In addition, live rock also contains a lot of these bacteria. An aquarium with a properly functioning filter and live rock should therefore have undetectable levels of ammonia.

Nitrite (NO_2^-)

Ammonia is converted into nitrite by nitrifying bacteria, before it is then turned into nitrate. Nitrite is also toxic to fish, and therefore needs to be kept under control. As with ammonia, an aquarium with a properly functioning filter and live rock should have undetectable levels of nitrite.

Common causes of high ammonia or nitrite

A high ammonia or nitrite level indicates that the nitrifying bacteria are not able to cope with the amount of waste that the fish are producing. Common causes include:

- The aquarium is new, and too much livestock has been added at once (see earlier section on stocking your aquarium).
- The biological filter media has been washed in tap water, killing its population of bacteria.
- The filter has been switched off for more than a few hours, leading to the death of large numbers of filter bacteria.
- A lot of fish or corals have been added at once to an established aquarium, overwhelming the existing bacteria.
- The filter has been allowed to get very dirty, clogging the biological media and reducing its effectiveness. Or the protein skimmer is not working correctly, or has not been properly maintained.

Dealing with high ammonia or nitrite

If you have a high ammonia or nitrite level, it needs to be dealt with to avoid harming the fish and corals.

- Perform one or more partial water changes, using seawater mixed to the correct salinity. This is important if levels are very high. Because seawater takes 24hrs to mix properly, have some ready-made just in case. Especially in the early days of setting up the aquarium.
- Add **Tetra Marine SafeStart** to the aquarium, to replenish the filter bacteria.
- Reduce feeding to once every day or two, until levels fall.
- Ensure the filter is on all of the time, and is reasonably clean (wash biological media in aquarium water). Check the protein skimmer is working correctly.
- Do not add any more livestock until ammonia and nitrite levels are undetectable.

Nitrate (NO_3^-) & Phosphate (PO_4^{3-})

Nitrate is the end product of biological filtration. In sufficient quantities it may harm sensitive fish and corals, and will encourage nuisance algae.

Phosphate is excreted directly by fish and leached from solid waste, and will harm some corals and other invertebrates. It will also encourage nuisance algae to grow.

High levels of either nitrate or phosphate are indicative of the aquarium not coping with the amount of waste being generated by the livestock, or a lack of maintenance.

Controlling nitrate and phosphate

Ways of controlling phosphate and nitrate include the following:

- Feed a good quality food, such as **Tetra**, to reduce waste production. **Tetra Marine Crisps** are especially good for minimising nitrate and phosphate production.
- Keep the aquarium and filter reasonably free from debris, by removing it regularly.
- Use **Tetra NitrateMinus** to reduce and control nitrate levels.
- Make sure you have the correct size of protein skimmer for the volume of water in your aquarium. Ensure it is set up and being maintained correctly, and consider a larger unit if this doesn't help.
- Use reverse osmosis water for mixing seawater, and use a good quality, phosphate and nitrate-free salt such as **Tetra Marine SeaSalt**.
- Add phosphate-removing media to the filter.
- Increase the frequency of water changes.

pH & KH

The pH (acidity) of seawater should remain within the range 8.1 – 8.4 for a healthy marine aquarium.

The pH level and its stability depend on the water's ***buffering capacity*** – its ability to resist changes in acidity. Most of the buffering in a marine aquarium comes from bicarbonates, which can be determined by measuring the KH (carbonate hardness) level. A KH level of 7 – 11°dH (German 'degrees of hardness') will maintain a stable pH, and also provides the best conditions for healthy coral growth.

Bicarbonates are used up over time in an aquarium, leading to a falling KH. If left unmanaged, this can lead to an unstable pH.

Controlling pH & KH

- Carry out regular partial water changes, using seawater mixed with a good quality salt such as **Tetra Marine SeaSalt**.
- Add **Tetra SafeBalance** to the aquarium weekly to replenish KH and keep the pH stable.
- If the KH level is too high, make sure you only use reverse osmosis water for mixing new seawater. Also, only top up evaporation losses with freshwater.

Calcium (Ca^{2+})

Calcium is essential for the growth and health of many marine invertebrates, including hard corals, shrimp, and snails. Natural seawater has a calcium level of around 400 – 420mg/l, so levels should not be allowed to fall much below this in an aquarium. Because calcium is constantly being used up in an aquarium, it therefore needs constant replenishment.

Calcium levels can be maintained through regular water changes using a good quality salt, such as **Tetra Marine SeaSalt**. In well-stocked reef aquariums, or if regular water changes are not possible, you should also add **Tetra Marine MineralMix** weekly. Having calcium-rich rocks and substrate in the aquarium will also help.

Magnesium (Mg^{2+})

Magnesium is important in a reef aquarium, for the condition of corals and other invertebrates. It helps to maintain the availability of calcium, and is used by beneficial algae. It may be consumed over time, and therefore needs replenishment to maintain ideal levels of 1,290 – 1,320mg/l.

As with calcium, levels can be maintained through water changes using seawater mixed with a good quality salt, such as **Tetra Marine SeaSalt**. In more heavily stocked reef aquariums, or those where water changes are less frequent, **Tetra Marine MineralMix** should be added weekly.

Oxygen (O_2)

Marine fish, corals, and other invertebrates all need oxygen to survive and thrive. Normally, the water movement in a typical marine aquarium will be enough to maintain a recommended level of 5 – 8mg/l. However, if levels do fall too low, you should add additional aeration in the form of an air-pump, such as the **Tetra APS**. Signs of low oxygen levels include 'gasping' at the surface and general lethargy.

Testing aquarium water

The only way to be sure that you are providing the correct environment is by testing the water. This should be done weekly in an established aquarium and daily in a new one.

The quickest way to check water quality is with a **Tetra Marine Test 5in1** kit, which tests five parameters in just 60 seconds – pH, KH, Nitrite, Nitrate, and Calcium.

For more thorough testing (e.g. in the event of a problem being detected), or for other parameters, use a **TetraTest** liquid test kit. These are available for ammonia, nitrite, nitrate, pH, oxygen, and more.

Recommended water quality for a marine aquarium

Salinity	35ppt
Ammonia ($NH_3/_4^+$)	0mg/l
Nitrite (NO_2^-)	<0.3mg/l
Nitrate (NO_3^-)	
• for fish-only systems	<50mg/l
• for reef aquariums	<10mg/l
Phosphate (PO_4^{3-})	<0.05mg/l
pH	8.1 – 8.4
KH	7 – 10°dH
Calcium (Ca^{2+})	400-420mg/l
Magnesium (Mg^{2+})	1,290 – 1,320mg/l
Oxygen	5 – 8mg/l