

So you wanna start of Reef Tank!? *Basic Guide to Saltwater Aquariums*

The Ocean:

In the wild most marine environments experience little in the way of fluctuations in water parameters, the elements that make up sea water remain in the same ratio to each other and marine organisms have evolved to survive in this stable environment. Likewise waste matter is heavily diluted or taken care of by complex biological processes and any changes in water chemistry, temperature, PH etc tend to happen gradually.

Keep Good Water:

When keeping seawater in a small box such as an aquarium, Changes can happen very quickly and waste can also build up to toxic levels fast. Certain elements may become depleted too.

Keeping a marine aquarium is as much about keeping good stable water quality than anything else.

If the conditions are correct and kept stable then marine lifeforms will naturally thrive as long as they are also provided with adequate nutrition, lighting and gas exchange.

So keeping a reef tank involves maintaining excellent water quality at all times, you are aiming to keep your water parameters within a small window with as few fluctuations as possible.

Luckily when it comes to the complex make up of seawater - synthetic sea salt comes ready to use with the perfect balance of all those essential trace elements - as long as you mix to the same correct salinity every time, you know your water will be a constant.

Species Selection - The Choice is Yours:

Obviously fish and corals vary greatly and some species are far more suitable for captive life than others, always choose known 'hardy' species especially in the early stages. Compatibility is also a major factor to consider.



Bacteria & The Nitrogen Cycle:

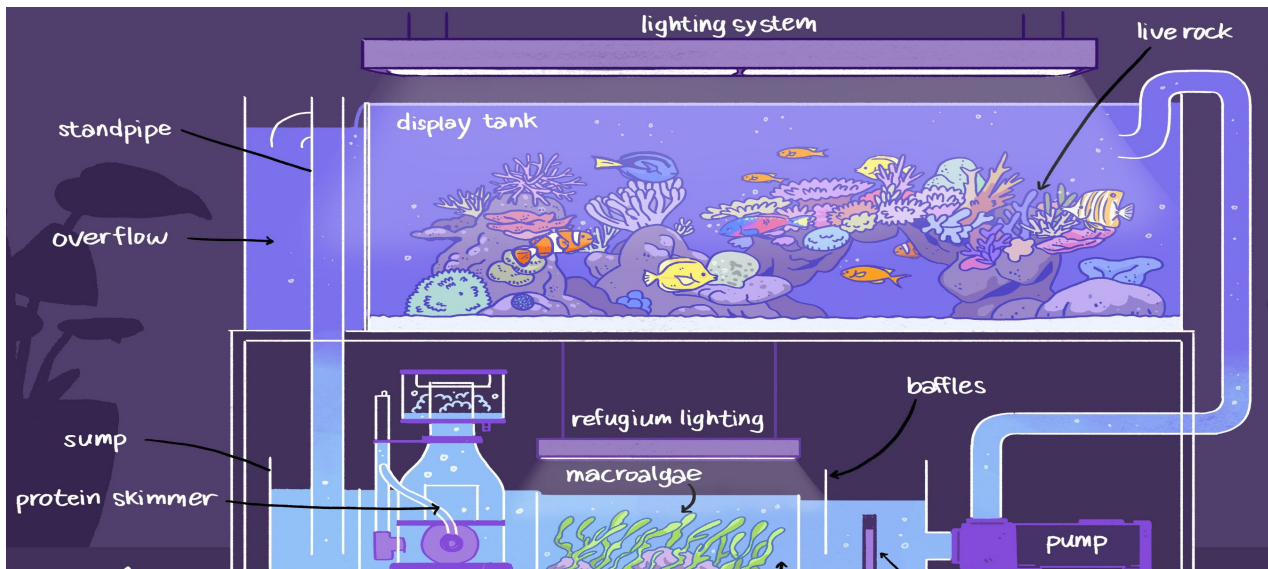
If you have ever kept freshwater fish, the the same principles apply when it comes to the Nitrogen cycle in a saltwater tank. Good types of bacteria play an essential roll in dealing with the toxic waste produced by food and animal waste breaking down.

The Biological Process:

A marine tank must be biologically mature before any great number of living organisms are introduced. You will need to have patience and add things very slowly. It can be said that marine aquariums take many months to fully mature and for all biological processes to settle down. In the first few months adding of any live stock must be done sparingly and water parameters tested regularly.

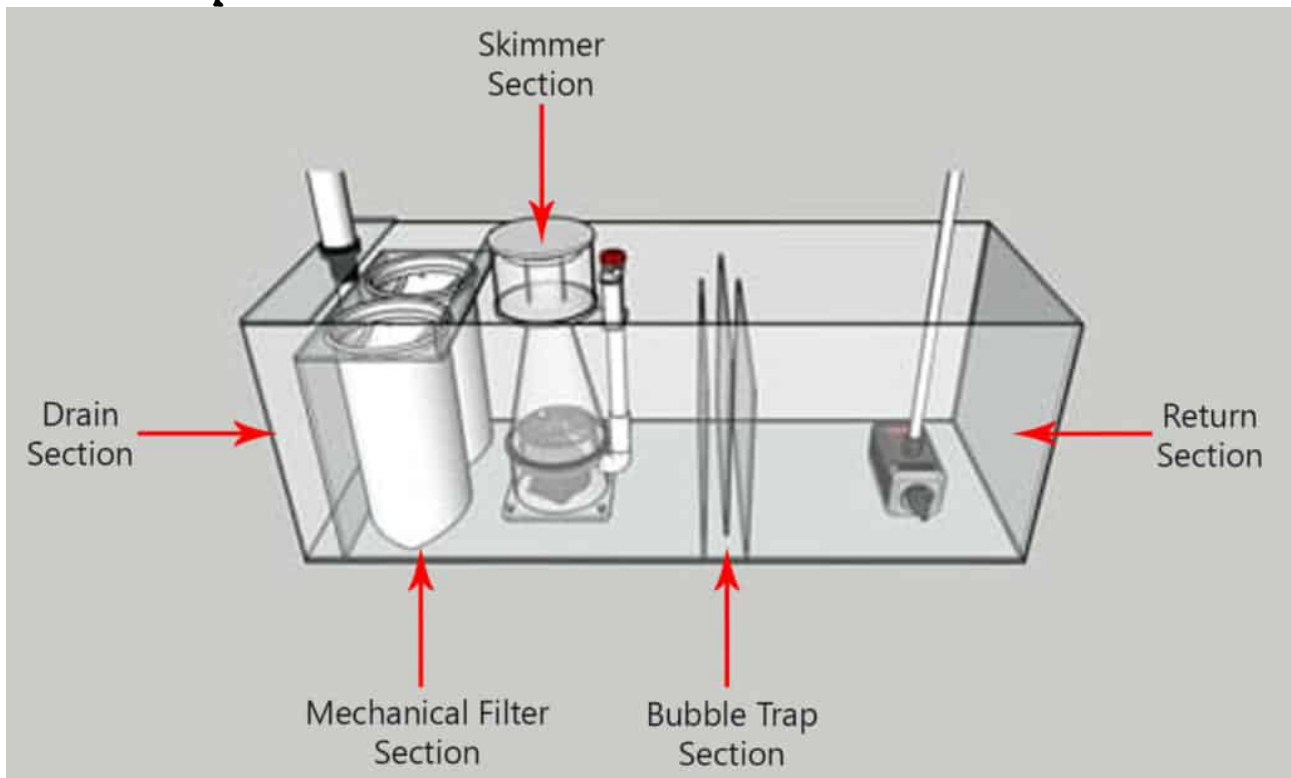
There are bacteria supplements and other products that can help kick start or 'seed' the system but whatever you do not rush! Generally the good bacteria that break down waste will be provided a home by the rock that use in the tank and sandbed. Conventional bio filters are not commonly used on reef tanks. The porous structure of ocean rock will provide an ideal home of bacteria and a myriad of beneficial micro organisms, you can seed your tank with 'live rock' or 'live Sand' or aquascape with dry rocks and wait for them to become biologically mature over time. Add plenty of rock at the start, a good rule of thumb is

So your rock and sandbed becomes your biological filter that will convert ammonia into nitrite and then less



harmful nitrate.

Basic Sump / Filter Chamber



Filtration Methods - Nutrient Export = Waste Reduction:

Other important apparatus include a Protein Skimmer which will remove lots of dissolved organics /waste proteins before they have chance to break down. Some sort of activated carbon filter or reactor can also be used to keep water clarity high and further remove waste particulates - this chemical media should be changed out regularly. Nitrate levels should be monitored but so too should Phosphate levels.

Phosphate like nitrate is a waste bi product and high levels will fuel algae outbreaks and can be harmful to corals in high levels, keeping your phosphates in check is important - various medias for removing it can be implied in a similar way to activated carbon.

Your tank should be placed away from direct sunlight as this can cause excess algae growth.



Water Loss:

An important consideration is water evaporation. When water evaporates from your tank your salinity will increase, as such that water should be replaced daily. You can simply draw a line on your return chamber and top back up to that line or better still add an auto top up unit which will take care of evaporation for you. You just add water to a top up vessel which pumps it in to your tank as required.



Always use RO pure water for making seawater and topping up - tap water is not recommended.

Acclimation:

All corals, inverts and fish should be slowly acclimated to new water conditions to avoid shock.

Quarantine:

Ideally all new fish arrivals should be quarantined and observed before adding to your main display, giving a

chance to notice and treat any disease or parasites. Newly imported fish may also be weak, stressed and prone to illness so a quiet tank where they can be adequately fed etc. Is beneficial in many cases.

Pests & Disease:

Newly imported marine fish that have been shipped half way around the World can be prone to illness - especially in first few weeks of captive life - some will have problems feeding and may have special requirements - try not to stress new arrivals and please do your research - known hardier specimens are your best bet - once over the first few months marine fish can be very long lived if your aquarium is well maintained and you give correct husbandry.

Corals have many enemies that can sometimes proliferate in aquariums, pest snails, worms and anemones will sometimes cause problems, there are special dips that you can give your corals before placing in your tank.

Compatibility: Some fish will fight with (or even eat) other fish, some fish will eat snails and crabs, some fish will eat corals and some corals will even eat fish! - do your research before stocking as animals don't always get along with one another.

Marine Aquarium Equipment List

Hardware:

1. Aquarium Tank / Stand with Sump or rear chamber to house filtration
2. Protein Skimmer
3. Heater
4. Circulation Pumps / Wavemakers - aim for boiling effect on surface
5. Pipes / Plumbing / Tubing / Fittings
6. Return Pump (if sump)
7. Reactor - to house filter media like Carbon / Phosphate remover
8. Reef Grade Lighting
9. Refractometer (measure salinity)
10. Auto Top Up
11. or a vessel to manually add fresh water that is lost through evaporation
12. Siphon & Hose - for water changes
13. Buckets / Barrels For Water Changes / salt mix / RO
14. Algae Scraper

15. Net
16. Salt or a source of synthetic sea water
17. Bio Media (usually provided by the rock and substrate)
18. Plenty Of Rock - to act as Biological Filter / home for organisms
19. Sand Substrate (not essential but often desired a sand bed can also help with bio filtration)
20. Test Kits & Food - see below
21. Thermometer
22. Refugium Equipment (grow light /macro algae) optional

Food

Offer a broad range of dry and frozen foods.
Mysis, Krill and a good quality flake and pellets, some vegetable matter / seaweed.

Test Kits

Initially you will require:

1. Ammonia Test
2. Nitrite Test
3. Nitrate Test
4. Phosphate test

The above 4 needed in early stages to monitor tank cycling, going forward you will likely mainly be using the Nitrate & phosphate tests to monitor waste levels.

Marine Aquarium Equipment List - continued

Test Kits:

Recommended to check regularly:

5. PH test
6. Alkalinity Test

As you progress further:

7. Calcium
 8. Magnesium
 9. Iodine
- other trace elements

There are many more to test for certain trace elements - the above are the most important for coral health
ICP tests can be sent off to give you a full accurate reading on all parameters.

Calcium & Alkalinity:

You do not need to worry too much about Calcium or trace elements in the initial stages of a new tank with fresh saltwater and little in the way of corals, only later when you have a tank full of hard corals will these elements need to be tested for. Certainly don't dose or buffer anything you haven't tested for as your make up water should provide everything in correct levels. Water changes replenish minerals too and can be a simple way to maintain water parameters especially in a smaller tank.

A 25% water change every 2 weeks should keep waste levels in check - always test salinity and match it to your aquarium water.

Your lights should be on a timer and only on for 12 hours a day max. Please Resist the temptation to overfeed our tank and keep the bioload small in the first few months.

When adding fish start slowly and build up over time to a light stocking level, remember that stressed fish are more susceptible to disease so keep noise and hands in tank to a minimum especially when first settling in. Acclimate all creatures slowly to avoid shock.

Be patient and only add fish and corals slowly over time or you risk crashing the system in the early stages.

ALGAE - No matter how hard you try to keep your nutrients down, new tanks nearly always go through various algae stages.

Unsightly algae on the sand bed, rocks and glass is almost inevitable. This causes many aquarists to give up but please don't - these are a natural part of maturing a marine tank and provided you persevered these will burn themselves out after a few months. Clean up crew in the form of snails, critters and other sand sifters can play an important roll in cleaning algae and eating detritus.

Remember to siphon the substrate during water changes to get rid of uneaten food before it decays. Conventional filter foam or filter socks should not be used in a marine tank unless washed every couple of days, if left these areas can become 'nitrate factories'

Macro Algae - Another way to take nutrients down and out compete algae in your display is grow a macro algae such as Cheato or Caulpera in your sump area or in a refugium - if you intend to do this you must provide a decent growlight for it to be effective, this can also help balance the PH of the tank at night.

Read / Watch / Listen / Research:

Educate yourself by taking on as much knowledge as possible, there are some fantastic Youtube channels, websites and social media groups that will provide expert knowledge. Research the exact needs of any animal you intend to keep before purchasing.

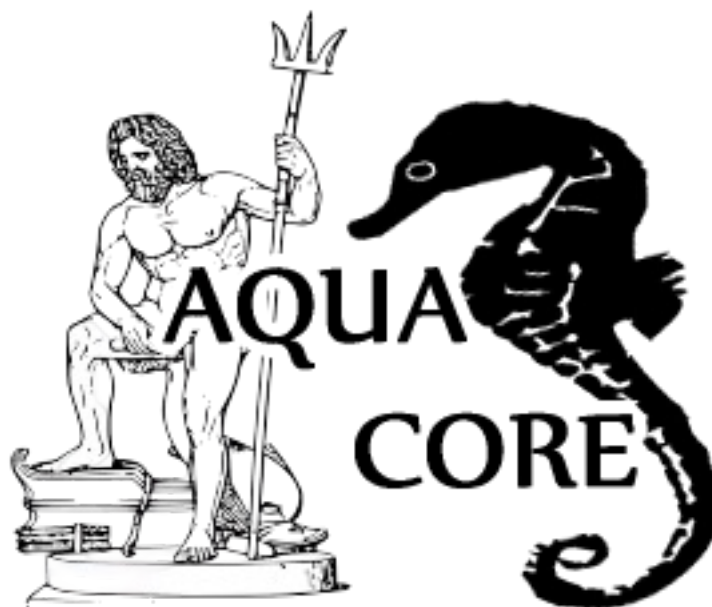
TOP TIPS:

- KNOWLEDGE - DO YOUR RESEARCH!
- DO NOT RUSH ANY STAGE
- CORRECT PARAMETERS
- STABILITY
- BALANCE
- PATIENCE
- DO NOT OVERFEED
- DO NOT OVERSTOCK
- CLEAN UP CREW
- CHOOSE HARDY FISH / CORALS
- GOOD GAS EXCHANGE
- DECENT SKIMMER
- RUN CARBON & PHOSPHATE REMOVER
- TEST
- SIPHON
- REGULAR WATER CHANGES
- DON'T STRESS FISH
- OFFER VARIED DIET

Good Parameters to keep:

Temp: 25c
Salinity: 35ppt
Alkalinity: 8 dkh
Calcium: 440ppm
Magnesium: 1400ppm
Phosphate: less than 0.1ppm
Nitrate: less than 10ppm

Written and compiled by Adam E for Aqua Core.



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AQUA *Kulture*

info@aquacore.co.uk

coreshop.uk

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