



Manual for the Ultralith System and the Fauna Marin products

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Dear Aquarist

Thank you for your interest in our products. Your aquarium is a biological system that houses many different organisms that have diverse requirements regarding water quality and nutrition. In order to fulfill all these requirements we have developed novel and user-friendly systems, which can be used even by the novice. Contrary to many other manufacturers we do not think in single products but in complete systems in which different components work together, just like in nature.

The results of our research and development efforts are system specifically designed for the successful husbandry and breeding of marine animals.

Ultralith System

Our Ultralith system is based on the application of Zeolite minerals, specifically suitable for the use in marine aquaria in connection with the classical Berlin style filtration system. The Ultralith system is NOT suitable for DSB or Jaubert Systems or Mud filters. Ultralith is a filter medium and is used to reduce nutrient concentration in marine aquaria, thereby enhancing the coloration of the corals. In combination with our care products and foods it becomes very easy to keep corals and maintain their natural brilliant colors. The Ultralith system has to be adjusted to each tank and requires a certain discipline. To keep things as simple as possible and to provide you with the necessary background information we have put together this manual.

You can use the Ultralith system with just four products: UltraLith, Ultra Bak, UltraMin S, and Ultra Bio. In this most basic form you will already have a very effective water filtration and a tank with healthy and colorful corals.

This basic system is very easy to use; our additional products will help you to increase growth rates and coloration even more.

Please read the manual carefully, especially when you are using the additional products.

The Ultralith system contains the following products:

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|--------------------------|--|
| 1. Ultralith | Marine Zeolite Mix |
| 2. UltraMin S | Basic Nutrient and Trace element solution |
| 3. Ultrabak | Bacterial food, Carbon and Vitamin source |
| 4. UltraBio | specially formulated blend of different bacterial strains for rapid nutrient reduction |
| 5. Ultra Amin | Food and color booster for SPS/LPS corals based |
| 6. Ultra Carb | activated carbon |
| 7. UltraOrganic | Solution with organic trace elements and Nutrients |
| 8. Powertrace 1-4 | Trace elements for specific additions (4 solutions) |

In case you have any further questions, please do not hesitate to contact us.

You can reach us via email

info@faunamarin.de

You can find us also in the main Ultralith Forum www.Ultralith.com
and larger English and German speaking Forums

ULTRALITH SYSTEM MANUAL

Our Ultralith system consists of several components that are specifically formulated to work in combination in order to reduce nutrient concentrations down to levels that are necessary to keep sensitive stony corals even in highly polluted tanks.

The main component of the Ultralith system is the Zeolite Filter media. We use a mix of different grain sizes, this mixture has proven its suitability over several years now, and only poses a risk for corals when massively overdosed.

What is the Ultralith System?

Our filtration system is characterized by its simplicity, it was designed for general filtration and water purification, not just to produce faintly pastel colored SPS corals.

Filtration with the Ultralith System can enhance the natural coloration of all corals.

It is also suitable for maintaining water the quality in tanks that are set up for keeping non-photosynthetic corals.

Combined with our special food (UltraBak and Ultramin S), Ultralith is a simple and safe method to keep even the most delicate and sensitive animals. With Ultralith it is possible to cycle newly set up tanks quickly and safely, also older tanks can be rejuvenated and the old tank syndrome can safely be avoided.

The Ultralith system has to be adjusted to each tank and requires a certain discipline. Our basic system is designed for modern reef tanks with mixed livestock. More extreme, but still naturally looking colors can be achieved with higher dosing.

The Ultralith system needs some time to achieve optimal results and should therefore be started slowly and carefully. Patience is perhaps the most important prerequisite for a successful start with the Ultralith system.

How does the Ultralith system work in the Aquarium?

Ultralith removes Ammonium and Ammonia from the water and binds it to its mineral structure. The specially formulated bacterial strains (UltraBio) will colonize the mineral grains and use the bound nutrients, thereby avoiding the buildup of Nitrate in the Aquarium. Ultralith also removes certain trace elements from the water, which can be replenished with our specially formulated trace element solutions (Ultra Trace 1-4) and our general Nutrient and Trace element solution (UltraMin S).

Ultralith does not remove phosphates directly from the water. However, by using Ultralith, skimming efficiency, bacterial as well as coral growth will be increased, thereby removing phosphate from the water. The result are concentration that are below the detection limit of standard hobbyists aquarium tests.

The trick, or rather the success of the method is to maintain extremely nutrient poor conditions and to add exactly those nutrients and trace elements, which are necessary to maintain maximum growth rates and coloration. Only through additions of bacteria, nutrients and trace elements can the corals be maintained at optimal conditions.

In the natural reef environment the corals have the necessary amount of nutrients constantly available, although the water is basically devoid of any measurable nutrients.

Such conditions are simulated with our Ultralith system, growth and coloration of the corals can be influenced by dosing of trace elements and nutrients.

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More information about Zeolithes

(1) Structure of Zeolite minerals

The name Zeolite goes back to the greek words “Zeo” (boiling) and “lithos” (stone). Upon heating, these minerals appear to be boiling. There are about 40 naturally occurring Zeolites, which can form many more mixed minerals of variable composition. Also huge amounts of Zeolites are produced synthetically every year, for example for laundry detergents. Ultralith is a natural Zeolite. Zeolites are minerals and consist mostly of silica and aluminium plus other elements like Sodium, Potassium, Iron, and Manganese, which determine the physical properties of the mineral.

The most interesting feature of Zeolites is their crystal structure. You can think of it as a sponge with many small and large holes. Large and small should be seen in perspective of the scale, the small holes have the size of single molecules, about one billionth of a meter. The size of these holes depends on the chemical composition of the mineral. These pores contain water, which causes the boiling when the minerals are heated.

What makes these minerals so special is their ability to absorb specific compounds. Which compound is absorbed depends on the size and shape of the holes in the crystal structure, which is depending on the chemical composition. Therefore, depending on their composition Zeolites preferentially absorb different compounds. Ultralith is specifically chosen to absorb ammonium (NH4+).

However, thinking of Zeolites just as absorbers is a bit oversimplified. They are actually ion-exchangers. The holes to which a compound binds are not empty but rather filled with sodium or potassium. As soon as a preferred compound is available, another compound, usually sodium and potassium, is given off and the compound will be absorbed. This reaction, the replacement of one ion for another ion, is called ion-exchange. In marine aquaria the liberation of sodium or potassium and therefore the resulting ionic imbalance is negligible as they are major constituents of seawater anyways.

The absorption of ammonium is just one half of the story. The other half is where the biology comes in. As already mentioned, zeolites have a very porous structure; under the microscope they look almost like a sponge. The larger holes are much bigger than the small ones, about a thousand times bigger. This porous structure creates a large surface area for bacteria to settle on. As the ammonium is adsorbed by the crystal structure, the bacteria living on the Zeolite get their food delivered to their doorstep.

The overall reaction that takes place in a Zeolite filter is the removal of ammonium and its conversion into nitrogen gas, which goes off into the atmosphere. The removal of ammonium takes place in three steps

- 1) Absorption of ammonium,
- 2) Oxidation of ammonium,
- 3) Denitrification.

As already explained, the ammonium will be adsorbed onto the surface of the mineral due to an ion-exchange process.

At the surface of each mineral grain, oxygen is still available. Here the ammonium is oxidised by autotrophic bacteria to nitrate according to the following formula
 $2\text{NH}_4^+ + 5\text{O}_2 = 2\text{NO}_3^- + 4\text{H}_2\text{O}$

This process consumes oxygen, thereby creating an anoxic environment inside the mineral grains. If this would be the only process that occurs in a Zeolite filter such a system would actually produce nitrate, and its use for aquaria would be rather limited.

Deeper inside the mineral grain, heterotrophic bacteria will consume the nitrate that is produced in the outer layer. This process is called denitrification, and occurs in two steps, from nitrate to nitrite, and further to Nitrogen gas which will diffuse out of the water into the atmosphere. The overall formula for both processes is given below



Because heterotrophic bacteria carry out this process, they need to be fed with a suitable carbon source such as UltraBak. By addition of suitable bacterial strains, e.g. UltraBio the removal of nutrients can be accelerated.

The different bacterial strains work as a team, the products of one strain are food for the next one. The feeding of the bacteria substantially increases the bacterial biomass inside the filter, which again results in a binding of phosphate. These bacterial films have to be removed regularly by shaking the filter. The removed material can either be removed by the skimmer or serve as food to some animals, especially filter feeders. In very nutrient poor systems the removed bacterial films can be an important food source for the corals. Eventually the bacteria will clog up the Zeolites and the material has to be exchanged.

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DOSING ULTRALITH SYSTEM

As an initial dose use 1 Liter of Ultralith per 400 L of water. **Please rinse the material well in RO (reverse osmosis) water before use.** In order to avoid overdosing, please precisely determine the net water content of your tank/system, including the volume of water in the sump. If you are unsure about the net volume, take the gross volume of the tank and subtract 20%.



ULTRALITH dosing :

Regular dose

1 liter Ultralith per 400 L of Water, flow rate in the filter 200 to 400 L per hour per Liter Ultralith

Initial dose

0.5 liter Ultralith per 400 L of Water, flow rate in the filter 200 to 400 L per hour per Liter Ultralith

Exchange intervals

Regular use: Every 6 to 8 weeks completely

Initial use: every 8 to 12 weeks depending of the nutrient levels in the tank

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TIP :

When exchanging the material completely it is of utmost importance to prepare the material properly: Water the Ultralith about 1 week in advance with RO water and exchange the water several times during that period. Even when exchanging the material only partially it is advisable to water the ULTRALITH prior to use. This makes the exchange less stressful for the corals and keeps the coloration more stable.

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Ultrabio

UltraBio is a mix of highly active bacteria, specifically formulated for the Ultralith system. This bacteria mix will prevent a monoculture in the filter and promotes the rapid processing of nutrients in the filter.

Standard dosing:

Shake well before use.

When starting to use UltraBio or after an exchange of the UltraLith filter medium add 1 drop per 100 liter every day for 2 weeks. After this initial phase, add 2 drops per 100 Liter every three days, until the next exchange of the Ultralith filter medium. Please add the UltraBio either directly into the tank or into the intake of the Zeolite Filter.

It is advisable to turn off the skimmer for 2 to 3 hours after the addition of UltraBio.

UltraBio is a mix of several nitrifying and denitrifying bacterial populations that were carefully selected for their ability to convert ammonia to nitrite, nitrite to nitrate and nitrate to nitrogen gas. Please add UltraBio at the beginning of using the Ultralith system and after an exchange of Ultralith.

Our bacteria mix is highly concentrated. You can actually see the bacteria with the naked eye as aggregates drifting in the solution. Please shake the bottle slightly before each use.

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ADVICE :

In older tanks with high nutrient concentrations please reduce the phosphate concentration with Ultraphos down to levels around around 0,1 mg/l – 0,05 mg/l before using UltraBak. After the phosphate reduction, dose UltraBio as recommended above.

UltraBio contains the marine nitrifying and denitrifying bacterial strains „Nitrosomas sp. Nitrobacter sp. Nitrospira sp. Paracoccus sp. Pseudomonas sp. and is highly concentrated.

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ATTENTION: Our bacteria mix is highly concentrated and you can actually see the bacteria as aggregates drifting in the solution. Through the high concentration of the bacterial cells in the solution, a contamination with foreign or a decay of the product can effectively be ruled out and makes preservation like storage in a Nitrogen atmosphere unnecessary. The solution has a shelf life of at least 9 months and does not require re Fridgeration.

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FAUNA MARIN BACTERIA SYSTEM for nutrient reduction

UltraBio can also be used for nutrient reduction without the use of Zeolites or other adsorbers. If you want to use UltraBio without Ultralith, you have to use UltraBio in combination with Biofood as a food source for the bacteria.

Dosing :

Shake well before use

1 drop each of UltraBio and 3 drops of Biofood per day per 100 L, directly into the aquarium. Keep this dose until Nitrate and Phosphate levels have dropped significantly. After you have reached the desired water parameters, decrease the dose by 50%.

Cyanobacteria:

The combination of UltraBio and UltraLife are a very effective treatment against cyanobacteria in reef tanks. Cyanobacteria form red films or carpets which can cover the entire decoration. They are good indicators for a misbalance between nutrients. An addition of UltraBio and Ultralife will reactivate the growth of a healthy and diverse bacterial population by balancing out the nutrients.

Dosing:

Different products have to be mixed before dosing. The daily dose per 100 L of tank volume is 2 drops of UltraBio, half a tablespoon of UltraLife and 2 drops of UltraBio. Mix all the ingredients together and add them into the intake of a pump or any other place with high flow. Maintain this treatment until the Cyanobacteria are clearly reduced. This may take several days to weeks, so please be patient. In most cases the treatment works in less than one week.

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Our multi functional product

ULTRAMIN S :

Ultramin S is the central component of almost all of our systems.

Ultramin S is a cocktail of amino acids, vitamins, readily bioavailable carbon sources and trace elements.

This mixture feeds bacteria and thereby enhances nutrient removal. Also it provides essential nutrients, vitamins, minerals, and trace elements for growth and coloration.

Ultramin S is highly concentrated, please take great care to dose the correct volume. We recommend using our special dosing-syringes for accurate dosing.

Ultramin S is stabilized and has a long shelf life.

A clear signal for overdosing is a whitish or greenish film, similar to diatoms. In such a case reduce the dose by 50 % until the films are gone. Usually the films first appear on the glass. So if you have to clean the glass more often than usual, you should reduce the dose.

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ADVICE:

The more nutrients you have in your aquarium, the more Ultramin S you will have to use. When you nutrient levels start to drop you have to reduce the dose accordingly to avoid overdosing,

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Dosing for Ultralith filtration method

In addition to Ultramin S, please use Ultrabak to start the bacterial colonization of the Ultralith filter medium. Use 3 ml each of Ultramin S and 3 ml Ultrabak per 1000L per day, after the nutrient levels start to drop decrease the dose slowly to 2 ml per 1000L per day. If nutrient levels are extremely low you can decrease the dose even further to 1.0 ml per 1000 L per day.

Ultramin S should be used permanently and dosed every day.

Ultramin S is a key component of our other systems as well. It can also be used to feed clams and other filter feeders as well as Gorgonians, soft corals and LPS corals. For these systems the dosing of Ultramin S is significantly different, please refer to the special manuals.

Fauna Marin Sea Fan System
 Fauna Marin Dendro System

Ultramin S is full of many essential elements and causes a very rich coloration of SPS corals. If you are interested in very light and pastel-colored corals you can reduce the dose of Ultramin S to 1ml per 1000 L / 260 gal. per day and slightly increase the dose of UltraBak. The exact dosing of both solutions has to be determined specifically for each tank. Please do all changes slowly and carefully.

Nutrient reduction with ULTRABAK (bacteria food and starter Solution)

Ultrabak is a liquid bacteria food designed for nutrient reduction in the reef aquarium, In combination with our bacteria solution (UltraBio) Ultrabak can be used for the efficient reduction of Nitrate and Phosphate concentrations. It is also part of the Ultralith system. When starting the Ultralith system in tanks with very high nitrate and phosphate levels, Ultrabak should be used prior to Ultralith to bring down nutrient levels in order to avoid a too rapid decrease in nutrient levels, which may cause adverse reactions of the corals.

Dosing in the Ultralith system :

3 – 5 ml Ultra Bak per 1000 L per day, preferably split into several doses given throughout the day.

Dosing in tanks with high nutrient levels, in combination with Ultrabio, no Ultralith :

6 ml per 1000 L per day, until nutrient concentrations start to drop, then stepwise reduction down to 3 ml per 1000 L per day, preferably split into several doses given throughout the day. UltraBio standard dosing 1 drop/100 Liter/day

Dosing as a sole additive :

10 ml per 1000 L per day until nutrient concentrations start to drop, then stepwise reduction down to 5 ml per 1000 L per day until the desired nutrient levels have been reached. Dosing should preferably be split into several doses given throughout the day.

Dosing prior to Ultralith filtration :

8 ml UltraBak per 1000 L per day for 14 days, then in combination with Ultramin S, each solution 3 ml per 1000 L per day till the nutrition level goes down.

In established tanks with larger nutrient depots start with 25 % of the recommended dose and do at least 10 % water change per week. increase slowly (+ 10 % week) until you reach the recommended dosing level.

DOSING Ultralith Filtration :

When starting the Ultralith method use a combination of Ultramin S with the bacterial starter solution UltraBak. Dose 3 ml each per 1000 L per day, and slowly reduce the amount to 2 ml per 1000 L per day. In cases of extreme nutrient depletion, reduce the dose further down to 1 ml per 1000 L per day.

The basic dose for both solutions in normally stocked tanks is 3 ml per 1000 L per day. Depending on the water parameters, this dose can be increased to up to 10 ml per 1000 L per day.

By maintaining extremely low nutrient concentrations in the tank, the corals will reduce the amount of symbiotic algae in their tissue. This will on the one hand cause a more colorful coloration of the coral as the pigments are located below the layer that contains the algae, but also reduce the amount of food the corals will receive from their symbiotic algae. In order to provide enough food for the corals to maintain optimal growth and coloration please use Ultramin S This solution will provide the essential nutrition for the corals, including vitamins and trace elements. This solution also contains carbon sources, which will also aid the nutrient reduction in the tank. The lower the nutrient concentrations in the tank, the smaller the dose has to be. Through the separate dosing of coral foods and color-enhancing trace elements it is possible to increase growth rates and coloration without any negative effects on the water parameters.

ULTRA AMIN :

Our coral food UltraAmin is specifically formulated for SPS and LPS corals. Ultra Amin is a special organic acid mix to enhance coloration as well as polyp expansion of Acropora and Pocillopora corals. In combination with UltraLith it will provide all essential elements and nutrients for small polyped scleractinians.

Dosing :

1 ml per 100 L per day. Through a special preservation, this solution can be used in dosing (peristaltic) pumps.

UltraAmin can also be used separately without UltraLith. We recommend a combination with UltraOrganic trace elements

Dosing :

UltraAmin 1 ml per 100 ml per day

UltraOrganic 1 ml per 100 ml per day



ULTRALITH FILTER

In order to make the use of Ultralith as easy as possible, we recommend our Ultralith filter. With this filter you can easily clean the filter medium. The filter can be use internally as well as externally, but usually they are placed in the filter sump.

The filter is pressure resistant and can be used in any location. The flow rate can be adjusted with a ball valve (available optionally), which is especially important for smaller tanks and during the start-up phase of the Ultralith system.

The integrated cleaning rod makes the daily cleaning routine very easy. You can also use the Ultralith filter medium in a hang-on or pot filter. In such a case you have to shake the filter in order to remove excess biofilms from the filter medium to keep it active. The detached biofilms can either be flushed into the skimmer and thereby removed or into the tank where they will be taken up by the corals as food. In both cases the removal of biomass will help to reduce the nutrient load in the tank.

The flow rate of the pump should be high enough to maintain a sufficient flow when the reactor is fully loaded. If less material is used, the flow rate may be too high and should be reduced with a valve at the outflow of the filter.

Before using the Ultralith please rinse it well in RO water. The fine particles should not reach the tank. There will always be some abrasion of fine particles when the grains move against each other. This will cause some slight and harmless turbidity, which will disappear within a few hours.

Interval mode/ high power mode

When starting the system or when having to deal with extremely high nutrient concentrations, the filter can be used in interval mode. In this case the internal circulation pump of the filter is turned on and off alternatively every 3 hours. In this mode the bacterial removal of Phosphate is enhanced. This method is specifically suitable for the recovery of older and/or highly polluted tanks. It is of utmost importance to keep the Ultralith submerged at all times. We do not recommend this method for permanent use, as it is normally not necessary to remove such large amounts of nutrients from an aquarium. Also, when using the interval mode, the chemical parameters of the aquarium, especially Nitrate and Phosphate have to be monitored carefully. Rather give yourself and the tank a bit more time to reach the desired nutrient levels. The more slowly you do the changes, the more stable the tank will be in the long run.

Ultra Zeo-Matic

The Ultralith filter is also available in an automatic version, the daily cleaning will be carried out automatically. These filters can also be used externally and only need very little energy.

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ADVICE:

Always start with 25 % of the recommended standard dose and increase every 2 weeks by 25 % until you have reached the recommended dose or the corals show lighter colors. In older tanks (older than 1 year) start with 25 % but increase the dose only by 10 % every 2 weeks. The dosing of the other additives (Ultramin S, UltraBak etc.) has to be reduced accordingly. Please give your corals enough time to adjust to the new conditions.

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ADVICE:

If you are planning to install an Ultralith system in an older tank, please calculate a few weeks time for adjusting. The tank with all its inhabitants, including the bacterial populations, has to adjust to the new conditions. As a rule of thumb you can calculate about 2 months adjusting time for every year the tank has been in operation. It may take several weeks before you will see the first results and the corals have started to adjust to the new conditions.

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New tanks can be started with the Ultralith method from the very start, in fact this is what we recommend to obtain good results most easily. The initial cycling time will be drastically reduced.

Please note:

The Ultralith system is designed as an add-on to the Berlin Filtration system, it does not work in combination with other systems like DSB and mud filters

Established tanks:

established tanks may have significant phosphate deposits with have to be removed before using Ultralith.

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Our tip:

Install an Ultralith filter and fill it with a mix of UltraPhos and UltraCarb L. By using these adsorbers you can effectively remove Phosphate. After reaching a level around 0.1 ppm (mg/L) permanently, you can switch to the normal Ultralith system.

In rare cases, the growth of cyanobacteria was observed after the use of Ultramin S and UltraBak. This is a clear indication for phosphate depots in the aquarium. Reduce the dosing of the foods and continue with the phosphate reduction.

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Water tests

Most available water test only give approximate values. A more precise quantification is often impossible due to technical limitations. Still, water tests are important, as they allow us to establish proper conditions in our tanks.

By using calibrated reference solutions, water tests can be counter-checked, thereby allowing us to obtain results with sufficient accuracy and precision.

It is at least equally important to observe your animals carefully as they will indicate any changes almost instantly.

We are offering a Multi parameter reference solution, which you can use to check your water tests. This reference will help you to make sure you are handling the test correctly, as most incorrect measurements are not caused by wrong test but by incorrect handling.

Fauna Marin Multi Reference :

Density
Salinity
Calcium
Magnesium
Carbonate Hardness
Potassium
Silicate

Additional to the wide range of available water tests, there are a few other test that will help you to test your aquarium water

Depot test:

Prior to the PO₄ Test, heat the water to 80 ° C for a few minutes and let it cool down. Then measure the PO₄ concentration. In older tanks with significant phosphate depots the concentration in the heated sample can be 3 or more times higher than in the normal sample. Ideally, the concentration in the normal and the heated sample are identical.

Yellowness Test

Take two absolutely white 10 L buckets. Fill one bucket with Reverse-Osmosis or Deionized Water and the other one with water from the tank. Place both buckets side by side and look into them from above. The water in both buckets should have the same color.

In normal tanks there is usually a very faint, almost not detectable coloration of the water. This is normal and does not indicate a problem.

If the coloration is clearly visible please use activated carbon or exchange part of the Ultralith. Also check the pH of the water; in many cases tanks with yellow water also run on a low pH, which can have negative effects on the water chemistry and remobilize phosphate depots in the decoration.

Decoration

Please avoid using dead or revived live rock or buying live rock that has already been used as these will contain high nutrient deposits. It is best to use live rock for the decoration of your tank that is freshly imported or cured for 3 to 4 days. Dead/Dried live rock maybe used but they require additional curing/preparation before they are suitable to use.

The basic construction can be done most easily with massive limestone rocks or reef ceramics. It is absolutely not necessary to decorate the tank entirely with life rock. As a rule of thumb we recommend about 10 % of the volume of water in kilos of life rock, e.g. for 100 L (25 gal) of water use 10 kg (20 lbs) of life rock. More important than the amount of life rock is quality. It is most important to get the best and freshest quality available.

Avoid Tufa rocks or material that contains organic matter, it will eventually leach and contaminate the tank, leading to high nutrient loads, yellow water and cyanobacteria. Old life rock also contains many pollutants that will eventually leach back into the water, causing many unwanted effects like a drop in pH.

RIFFKERAMIK, (Reef ceramics)

An alternative way to decorate a tank is the use of artificial ceramics, so-called reef ceramics. This material is extremely well suited for the decoration of marine aquaria, but in our experience the initial cycling time is slightly longer.

Reef ceramics have many advantages, they are lightweight and allow for a rapid and easy decoration, the material has good “grip”, making it easy to achieve stable constructions by locking the pieces into each other without the use of additional cement, glue etc.

There are many pre-made pieces available, complete back walls with overhangs, caves etc, columns, pillars, giving you almost infinite possibilities to construct your reef. Custom made pieces in every shape and size are also available.

Another advantage of reef ceramics is the fact that the material does not accumulate any nutrients, which could eventually leach back into the water later. It is possible to start and run tanks with reef ceramics only, without life rock. However, we recommend to use about 5 % of life rock. The initial cycling time of tanks with predominantly reef ceramics takes a few weeks longer than in tanks with more life rock.

During the initial cycling time we recommend the use of a silicate adsorber, because the ceramics leaches some silicate at the beginning. The adsorbers will prevent the growth of diatom films on the rocks. After the production there is a very fine layer of dust on the ceramic, which should be removed prior to putting the ceramic into the tank because it would dissolve in the water and raise Calcium, Magnesium and Silicate concentrations to undesirable levels.

We recommend rinsing the ceramic with fresh water. As a minimum treatment, rinse it off with a strong jet of water. Preferably, soak the ceramic completely for 2 weeks and exchange the water during that time 4 to 5 times. With this treatment you will minimize the growth of algae and shorten the cycling time.

Coral Sand, Aragonit

We use Aragonite sand with a fine to medium grain size, 0.5 to 1.5 mm. The sand is thoroughly cleaned before putting it into the tank by first rinsing it several times with osmosis water, then the sand is placed into a bucket with osmosis water for about 1 week. The water is exchanged several times, during every water change the sand is mixed to flush out as much dirt as possible.

Life sand is becoming increasingly popular and we also recommend its use. However, this material tends to become overgrown with algae after putting it into the tank. This slight overgrowth usually goes away after a few weeks. When setting up a new tank, add the live sand after the live rock.

Ultra Power Trace Elements 1 – 4

Depending on coral growth, lighting, frequency of water changes, and skimming, certain elements may become depleted and have to be added additionally. Up to a certain level, this can be achieved with our multi functional solution Ultramin S. As the recommended dose for Ultramin S is very small for aquaria that are running on the lower limit of nutrient concentrations, it may become necessary to dose additional trace elements.

For normal tanks with some SPS, plus LPS, soft and leather corals, we recommend UltraOrganic. For tanks with mainly SPS and to achieve more extreme coloration, we developed our Powertrace elements 1-4.

The 4 element mixes are specifically designed to complement each other and to provide all necessary trace elements for tanks with a normal density of corals. In order to achieve more dramatic coloration, the dosing of each of the 4 Powertrace elements solutions can be adjusted to fine tune the coloration of SPS corals. Such deviations from the standard dosing recommendation have to be made with great caution. Each of the four Powertrace element solutions contains one complex of elements, which is specifically formulated to enhance one specific color effect. For example, an increase in solution #3 enhances blue coloration and causes a general shift towards lighter colors.

Dosing for normal use

1 – 2 ml per 100 L per day

Dosing for SPS dominated tanks and more extreme coloration

Slowly increase the dosing of solutions # 2 and #3, the exact amount has to be determined individually as it depends on several factors like lighting, filtration, growth rates etc.

Generally start with 25 % of the recommended dose and increase by max. 10% per week.

Clear indications for deficient dosing are fading or pale colors, or dull brownish colors. In extreme cases the tissue at the basal disc may turn white and start to decay.

Clear indications for overdosing are very dark colors, turning into brown eventually. Also algae growth is enhanced. Yellow corals turn greenish and green corals (e.g. the Enzmann Acropora aka. "Green Slimer") turns brown. You will eventually identify certain indicators or "Monitor Corals", which will allow you to detect changes in your aquarium. In case of an overdose, decrease the dose by 50% immediately and exchange about half of the activated carbon until the corals turn brighter again and show better coloration.

Activated carbon

We are offering two different types of activated carbon, which are designed for different applications.

For the Ultralith system, only **UltraCarb L** is used.

UltraCarb L is a slowly absorbing long-time carbon, which is exchanged on a monthly basis.

UltraCarb L will adsorb unwanted metabolic products as well as humics and toxins, so the corals can thrive in a healthy and stable environment.

Please wash all activated carbon before use to remove the fine dust. In case you cannot put the activated carbon in a filter, you can also put it into a filter bag. In this case please make sure that enough water flows through the bag, also move the bag regularly to prevent channeling.

The white grains in the UltraCarb L are specifically added to stabilize the pH and to bind phosphate.

Dose :

500 ml per 1000 L, preferably in a fluidized bed filter with very slow flow rate.

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ADVICE:

Soak the activated carbon in RO water for a few days to remove all air from the grains. This makes a use in fluidized bed reactor much easier as the activated carbon will sink to the bottom and no particles will be flushed into the tank.

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Skimming:

One of the most important pieces of equipment is a protein skimmer. This device actively removes nutrients from the water quickly and efficiently.

Please choose a skimmer rather too large than too small.

We recommend skimmers of the following manufacturers.

Fauna Main ULTRASKIM Blue Line Skimmers

Royal Exclusiv BubbleKing Skimmer

Of course, skimmers made by other manufacturers also allow you to maintain a reef aquarium successfully, but please make sure that the skimmers have sufficient filtration capacity.

It really does not matter whether you choose a needle wheel, a mesh wheel, or a Venturi Jet skimmer, as long as the skimmer has a sufficient filtration capacity. There is no "too much" of skimming, therefore you can safely install a skimmer that is overrated with regard to the size of your tank, in fact this is what we specifically recommend. WE run our own tanks with rather wet skimming, which also helps to remove excess phosphate. Even when this effect is only small, it does help in the long run, as the export of phosphate via the skimmer runs permanently.

Regular cleaning and service is very important to ensure a constant removal of nutrients from the aquarium. Install the skimmer upstream of the Zeolite filter.

Ozone and UV-C :

Ozone and UV are not necessary when running the Ultralith system and are actually counter productive. By adding ozone, many of the added trace elements and organic supplements will be destroyed. In specific cases a filtration with UV can be helpful but should be restricted to emergencies.

Lightings :

Light is Life and Light is Color

Even in very nutrient depleted tanks, light is the important factor to achieve colorful corals. For the last few years we are using BLV 10.000 K MH lamps in combination with blue Aqua Science T5 tubes.

Adequate lighting is one of the most important factors for successful coral husbandry.

A good example for a typical well-lit set up would be the following aquarium:

160x70x70 cm

The minimum option for a MH/T5 mixture would be 2 x 400 W + 4 * T5, a better option would be 2 x 400 W + 8 * T5, as this would create a more even light distribution.

Alternatively a set up with 2 x 250 W (SE) + 8 * T5 would also be a good choice. The 10000 K bulbs of BLV have a bright white light with a little yellow, in combination with blue T5 tubes the light in the tank appears rather blueish.

A suitable combination of MH bulbs and tubes would be

T5 AQUACIENCE BLUE
T5 AQUASCIENCE DUO
BLV 10.000 K
T5 AQUASCIENCE DUO
T5 AQUASCIENCE BLUE

In case of a set up with 8 * T5 the tubes in the center should be 15.000 K AquaScience Special. The differences in color can easily be seen after installation

Aqua-Science Special:

Very bright cool-white tube with a true 5 band spectrum and very good color rendering

Aqua Science Duo:

Blue-white mix tube, very cool and bright white light

Aqua Science Blue:

Slightly actinic blue tube with a very wide blue spectrum and new longer-lasting fluorescence gas filling.

AquaScience T5 tubes:

Long Term tests have shown that AquaScience tubes are superior with regard to their stability and longevity.

AquaScience tubes are available in three different colors. They are among the very few true 5 band fluorescent tubes on the market. The blue tubes are slightly actinic in order to enhance the fluorescence of the corals.

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Here you can find further information about light and spectra, also a report about a long term test of AquaScience tubes

<http://www.korallenriff.de/download/T5-1.pdf>

http://www.korallenriff.de/download/Artikel_Kelvin.pdf

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Lighting fixtures:

We only use fixtures and pendants of the following manufacturers in our own system: Giesemann and Fauna Marin Solaris T5.

These fixtures are currently the most efficient ones on the market and guarantee the highest light output combined with good longevity. All fixtures are made in Germany and comply with all relevant technical standards.

Ultra Solaris lighting systems are equipped with the original Osram QTI technology and an electronically controlled cooling system for the ballasts and the fluorescent tubes. Ultra Solaris fixtures are equipped with individual high-end reflectors for each tube. This is the only way to maximize light output and lifetime of the tubes. The reflectors are focused to bring light even in deeper parts of the aquarium, which allows to achieve maximum coloration of corals even at the bottom of the tank.

Please exchange the fluorescent tubes regularly in order to prevent drastic changes, which can stress the corals. Not every coral thrives under maximum light, even in SPS tanks there are some darker areas which provide a perfect habitat for less light-hungry corals, e.g. LPS.

Water / salts:

The proper preparation of synthetic seawater as well as the water to top off losses through evaporation are important as well.

The input of nutrients through tap water can be massive, depending on where you live. In any case a suitably sized reverse osmosis system combined with an ion exchanger column, filled with silicate remover will prevent any unwanted compounds to reach your tank.

For the removal of last traces of silicate we are offering our **Ultra MB20** ion exchanger resin. It has a very high capacity and will guarantee silicate free Osmosis water.

For both water change and top off water only osmosis water should be used.

Nutrition Input:

Every input of nutrients, e.g. through food or fish feces, will eventually pollute the water. In order to maintain proper conditions in the aquarium it is important to keep the number of fishes adequately to the size of the tank, feed the fishes only as much as they can immediately eat, and to install a proper filtration system.

We are convinced that fishes have to be fed well and have therefore developed a range of foods. These foods will provide all the necessary nutrition to your fishes and keep water pollution to a minimum.

Water Change:

For water changes we always use premium brand salt mixes: Tropic Marin, Reef Crystals, Preis, and Red Sea. These manufacturers can guarantee a constant high quality. For our coral tanks we only use the Pro Reef or Reef salts, which are specifically formulated for reef tanks.

Always use these salts with osmosis water and mix the salts in a separate container, not in the tank.

In order to achieve a quick dissolution of the salts you can add a bottle of sparkling mineral water per 200 L of osmosis water. Add the salt only after all the water is in the mixing container, never add the salt first and then the water.

Put a small pump into the container to mix the water and wait until all the salt has dissolved.

Check the salinity to make sure everything is correct, the water is now ready to be used. We do not recommend any aging or maturing of the freshly made seawater, rather the opposite. Use the water as fresh as possible. We recommend a water change of 5 to 10 % per week. Please make the weekly water change routinely, as it will remove many pollutants and replenish all trace elements in the correct ratio.

Water chemistry:

Chemical parameters are as important for coral growth and coloration as light and feeding. In our own coral system as well as in many tanks of our customers the best results were achieved with the following parameters

Calcium 390 mg/l – 440 mg/l

Magnesium 1250 mg/ - 1400 mg/l

Carbonate hardness 6,5 – 7,5 (2,4 – 2,7 meq/l)

Potassium 350 – 380 mg/l

pH 7,8 – 8,3 keep the daily fluctuations as small as possible

Salinity 32 – 35 ppt

Nitrate No₃ 0,1 – 2 mg/liter

Phosphate Po₄ under 0,02

All rapid changes will affect your aquarium negatively, please try to keep all changes to a minimum. If it is necessary to change any parameter, make the changes as slowly as possible. Especially pH, Ca, Mg and Alk should be very stable and fluctuate as little as possible. Continuity is one of the key factors for successful reef husbandry as these animals are used to very stable conditions in nature. Adjusting to changing conditions needs energy that will not be available for growth and coloration.

Calcium addition :

There are two common ways to replenish Calcium in a reef tank.

1) Calcium Reactor

When choosing a model, please make sure that it is big enough for your tank. Especially in SPS dominated tanks you will have to replenish large amounts of calcium and alkalinity. Magnesium is not directly used up by corals, but can become a limiting factor in reef tanks as it is an important buffer. It has therefore be kept stable as well.

In order to provide enough magnesium to your tank, you can exchange about 10 % of the substrate in your calcium reactor with our product UltraMag.

Even in very clean coral gravel there is some phosphate bound, which will eventually dissolve in the reactor. In order to trap this phosphate, you can install a small reactor at the outflow of the calcium reactor and fill it with UltraPhos to effectively remove all Phosphate.

We recommend the use of coarse high quality coral gravel, take good care to buy clean gravel, there should be no visible traces of organic matter and no smell.

Rinse the material for 4 weeks before use, exchange the water every week. Before using the material, test it for phosphate by placing a handful in seawater from your tank and let it sit for a few days before measuring. The test has to be made in seawater, a test in osmosis water will not give reliable results!

If the phosphate levels are too high, discard the material, it is not worth risking your tank for a bag full of dirty coral gravel.

The same cleaning and testing procedure should be carried out with coral sand for the display. Test every batch of sand to make sure you are not introducing an unknown amount of pollutants into the tank.

Like for all parameters, changes should be as minimal as possible. Therefore we recommend to top off the Calcium reactor regularly and not to wait until it is almost empty.

2) BALLING

We have developed a simple and efficient method to replenish Calcium and Alkalinity, called Balling light. With this method we replace the calcium reactor by adding salt solutions to the aquarium. With this method it is possible to adjust every parameter individually. Our original Fauna Marin Balling Salts have the highest quality according to German pharmaceutical standards.

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Here you can find the instruction manual for the Balling light method

http://www.faunamarin.de/bedienungsanleitung/manual_balling-methode_eng.pdf

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It is only a matter of choice which method one prefers. For SPS dominated tanks we recommend a calcium reactor. When using such a reactor there will be a slight shift in water parameters in the long run, which can easily be adjusted with the Balling method.

Make sure you are using high quality salts and always dissolve the salts prior to use. When using salts of insufficient purity (Ice Melt, Pickling Lime etc.) corals may exhibit adverse reactions or start to loose their color. Such adverse reactions can also happen upon a massive dose of a high quality salt. We cannot stress this point often enough, please do all changes in your aquarium slowly and as careful as possible.

livestock:

In our opinion a reef tank should contain fishes and not just corals. The fishes should be fed well and not starve in order to keep the corals colorful. If you are afraid to feed your fishes, get a better filtration system.



Short manual Ultralith System:

A: 1 liter of Ultralith per 400 L. Start with 25 % of recommended dose and increase by 25 % every 2 weeks. After reaching 100 %, exchange 50 % of Ultralith every 4 weeks. Clean/shake Ultralith every day.

B: Ultramin S Initially in combination with Ultrabak, 3 ml each per 1000 L per day. After nutrient levels have dropped significantly, slowly reduce the dose to 2 ml per 1000 L per day. In tanks with extreme nutrient depletion the dose can be reduced to 1 ml per 1000 L per day.

C: UltraBak: At the beginning of the Ultralith method in combination with Ultramin S, 3 ml each per 1000 L per day. After nutrient levels start to drop, slowly reduce the dose to 2 ml per 1000 L per day. In tanks with extreme nutrient depletion the dose can be reduced to 1 ml per 1000 L per day.

D: UltraBio: When starting the Ultralith method use 1 drop per 100 L per day for 2 weeks, directly into the tank or into the intake of the Zeolite filter. After a one-week break repeat the procedure for 2 weeks. After each dosing it is advisable to turn off the skimmer for 2 to 3 hours.

E: Ultra Amin: 1 ml per 100 L per day. Through a special preservation, this solution can be used in dosing (peristaltic) pumps.

D: UltraCarb L: Permanent use, 500 ml per 1000 L. Exchange completely every 4 weeks

Ultramin S and UltraBak can be diluted with Osmosis water for easier handling of the very small volumes.

Vacation:

During your vacation you can reduce the addition of food and trace elements slightly or use a dosing (peristaltic) pump. The cleaning of the Zeolite can also be reduced. After your vacation you can just continue like before. For a few weeks the tank can make do without water changes.

Thank for your interest
Claude Schuhmacher
Fauna Marin GmbH

FAUNA MARIN GMBH 71088 HOLZGERLINGEN +49 7031/238591
info@faunamarin.de