ATI-Essentials

User manual v 2.3

(Last updated May 2016)

Click with the subject that interests you

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Available sizes

The ATI Essentials are currently available in two different sizes.

500 ml version and 1000 ml version. The product in the 500 ml version is aimed primarily for aquarium systems that are less than 200 litres total water volume. Therefore, there are two different ways to mix the solutions (see pages 8 + 9).

The product in 1000 ml versionisparticularlysuitableforaquariumswithmorethan 200 litres Total watervolume. This versionmakesmixingeasierforthe larger aquariums (seepage 10).

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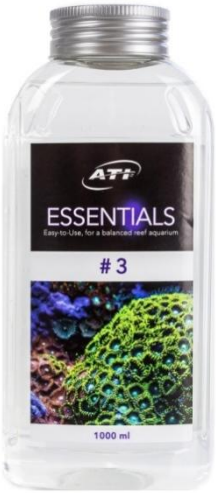
Ingredientsof ATI Essentials

The ATI Essentials # 1 includes various carbonate sources.

In the ATI Essentials # 2 and # 3 are all the other essential trace elements. They include mainly among others: boron, bromine, cobalt, chromium, fluorine, iron, iodine, potassium, lithium, manganese, molybdenum, nickel, rubidium, sulphur, strontium, vanadium, zinc, etc.

The ATI Essentials # 2 includes calcium.The ATI Essentials # 3 includes magnesium.

Once mixed the finished solutions may be stored in containers made of food grade plastic - HDPE high density polyethylene. The container should be firmly closed, housed in the dark at room temperature and be used within one year. The final working solution may be split, if you can't place it all near the aquarium.



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What do you also need when dosing ATI Essentials

- Reverse osmosis system with Deionising resin filter (preferably a twin DI filter pod setup)
- 3 storage/mixing/dosing containers that should be, depending on the size aquarium, 5, 10 or 20 litres.
- recommended but not essential: 4 to 6 channel dosing pump + sufficient silicone tubing
- Reliable KH-test

Before starting to dose

Activated carbon
This can be used regularly but not permanently. We recommend the use of 10 - 20 g of carbon per 100 gallons (450l) of aquarium water for 4 consecutive Days, just 1 or 2 times a month. The carbon after this time is exhausted and should be discarded.

Protein Skimmer
The protein skimmer is the lung of your aquarium. This not only ensures oxygen enrichment but also for the discharging of CO2. It is also the main part of your filter system because it effectively removes large amounts of organic waste from the aquarium. Make sure it is always working to its optimum performance.

KH-value (alkalinity)
Before starting with the ATI Essentials the KH value of your aquarium water should be stable and ideally between 7 to 8 dKH.

Ozone
The effect of ozone is controversial and is in part covered by activated carbon. Therefore, we do not recommend the use of ozone.

Phosphate removers
Phosphate absorbers should generally be used only if phosphate accumulates in your aquarium water to a concentration above 0.03 mg/l. Iron and Aluminium based removers should be alternated in small amounts, and as not to reduce phosphate levels too quickly.

Partial water changes
Partial water changes are only to be used as a tool when you're aquarium water quality has been compromised. The use of ATI Natural Sea Water (NSW) is recommended.

UV Sterilizers
We see the long-term use of a UV system to be counterproductive and damaging to the useful microorganisms within your aquarium. However the application of UV will not conflict with the use of the ATI Essentials and can be used as a preventative measure upon the introduction of new fish.

Water analysis

We recommend that you check periodically the water quality of your aquarium using our latest laboratory ICP analysis machine. Testing every 4 weeks for the first 3 months of using Essentials will give you a very accurate dosing programs tailored to your aquariums complete element requirements. Sign up here right now: lab.atiaquaristik.com

Water tests for the home

Please measure the following values of your aquarium water as indicated:

- KH-value, every day until the determination of you're aquariums individual dosage requirements are achieved, then 2-3 times a week
- Calcium/Magnesium concentration every two weeks; With the alternative application more often (see the alternative application on page 13)
- Nitrates, phosphates periodically when needed.
- Density/salinity weekly.

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To prepare the dosing solutions: Set 3 x 500 ml

For the ATI Essentials 500 ml bottles, there are two different possibilities for mixing the final dosing solutions.

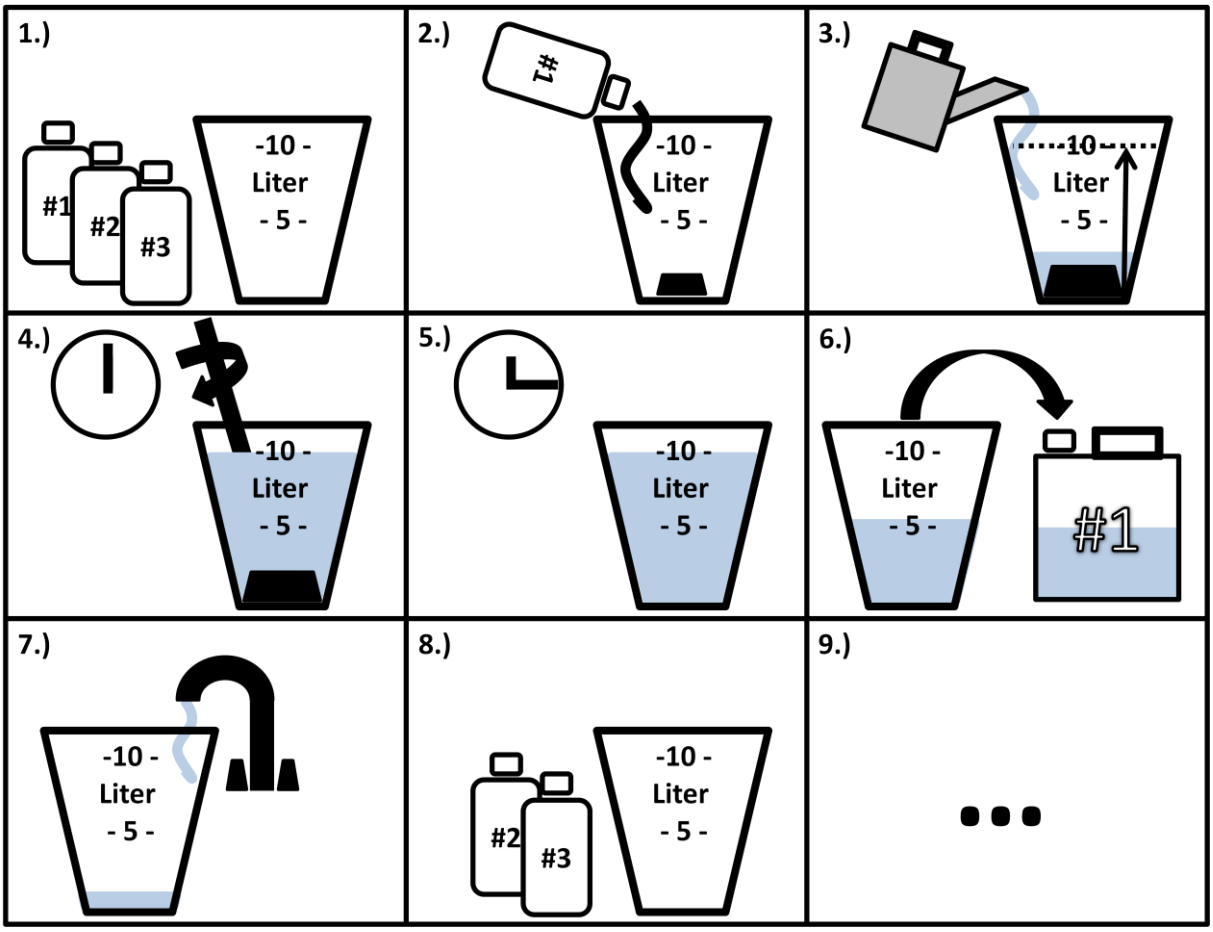
Option A: For aquariums smaller than 200 litres

or that typically show a very low consumption of ATI Essentials. This could be up to less than 10 ml per day of the solution. Therefore ATI Essentials in the 500 ml version can be diluted down more than usual. For this purpose the contents of the 500 ml version are mixed to 10 litres each. Please mix as follows:

1.) A bucket/container with a filling mark at 10 litres is needed.2.) Empty bottle of Essentials #1 into the bucket.

3) Use pure water with a TDS 0 and then fill the bucket/container to the 10 litre mark with water (for quickest results heat water anywhere up to 40 ° C). Rinse the product packaging with water from the bucket to make sure all is used. 4.) Keep stirring the solution or use a small pump to mix until the solution becomes clear. (# 1 may take longer at a lower temperatures)

5.+6.) Once the liquid is clear, store it in a suitable food safe container e.g. 10 litre canister made of HDPE plastic. 7) Rinse the bucket/container with water thoroughly before preparing next solution. 8) Then next prepare solutions # 2 and # 3 in same way.



Option B: For aquariums larger than 200 litres

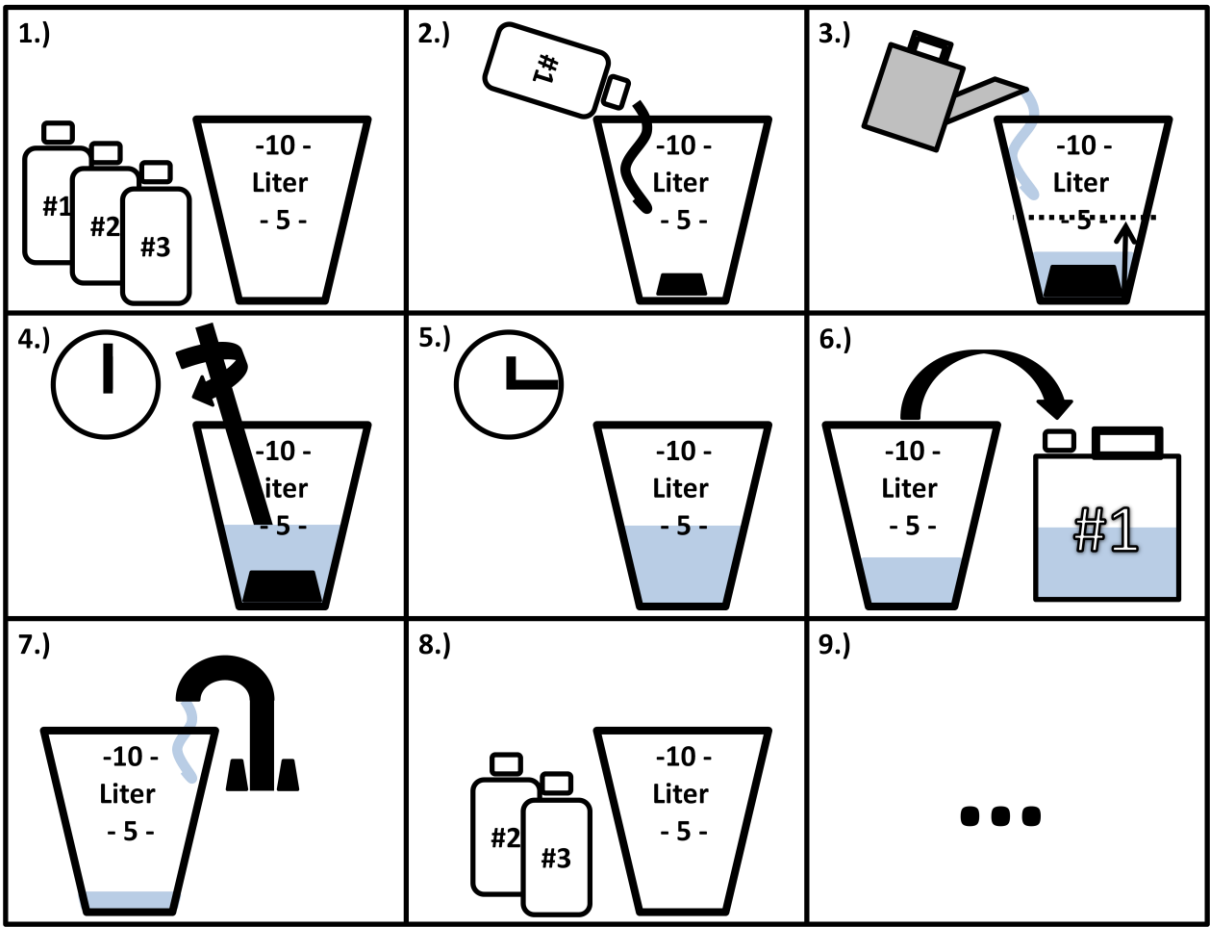
We recommend this version to owners of aquarium systems more than 150 litres total water volume, or owners of smaller aquarium systems with high element supplement demands. The Essentials are therefore better mixed to higher concentrations. Please mix as follows:

1.) A bucket/container with a filling mark at 5 litres is needed.

2.) Empty bottle of Essentials #1 into the bucket.

3) Use pure water with a TDS 0 and then fill the bucket/container to the 5 litre mark with water. (for quickest results heat water anywhere up to 40 ° C). Rinse the product packaging with water from the bucket to make sure all is used.4.) Keep stirring the solution or use a small pump to mix until the solution becomes clear. (Essentials # 1 may need longer at a lower temperature)

5.+6.) Once the liquid is clear, store it in a suitable food safe container e.g.5 litre canister made of HDPE plastic. 7) Rinse the bucket/container with water thoroughly before preparing next solution. 8) Then next prepare solutions # 2 and # 3 in same way.



Note for both variants: The Essentials can also directly be stored in a 5 or 10 litre container as long as they are HDPE recognised.

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To prepare the working solutions: Set 3 x 1000 ml

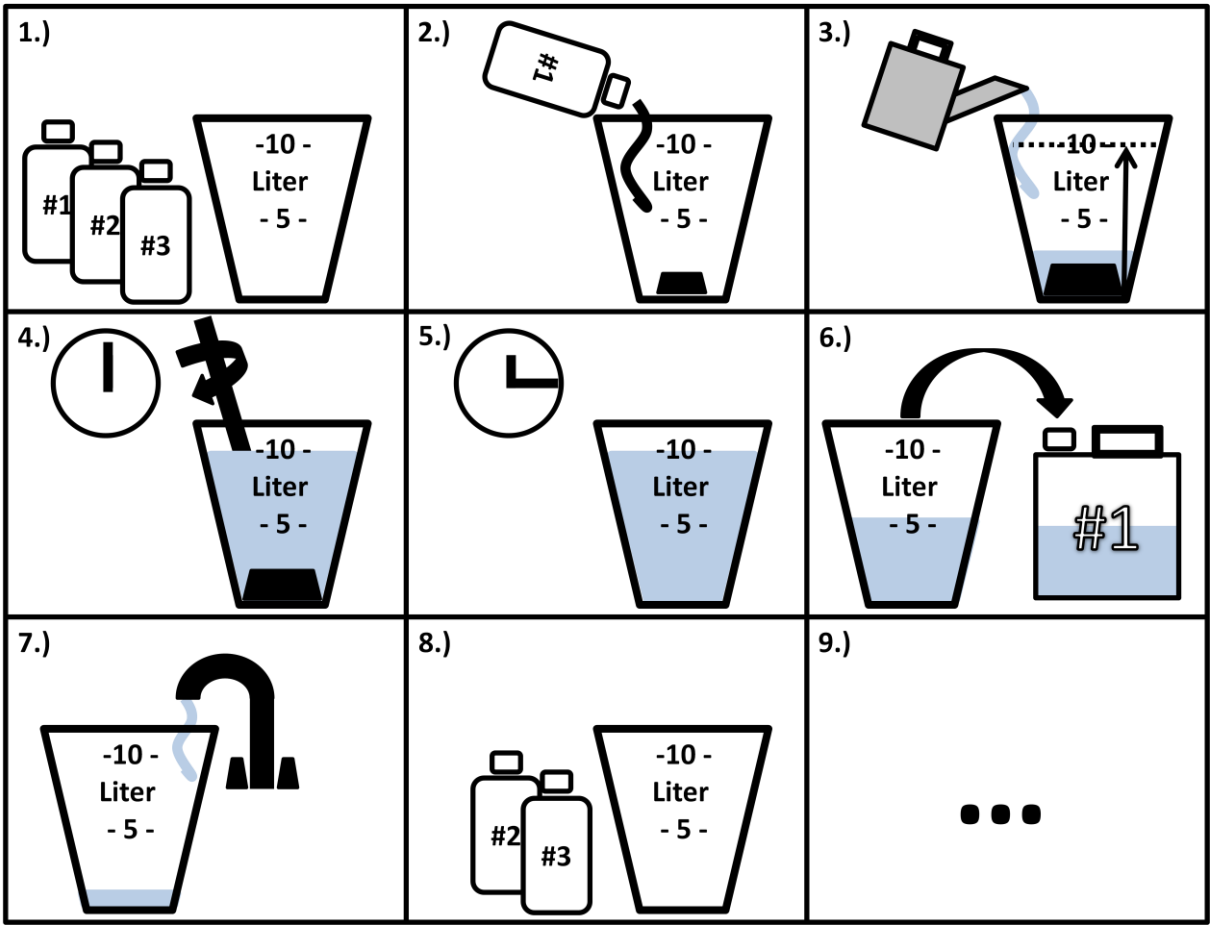
This is the recommended way to prepare the ready-to-use solutions from the product in 1000 ml packaging. This size is better mixed as highly concentrated to keep solutions amounts as small as possible. Note all solutions can be mixed to lower concentrations (more water added) but not higher concentrations.

Please mix as follows:

1.) A bucket/container with a filling mark at 10 litres is needed.2.) Empty bottle of Essentials #1 into the bucket.

3) Use pure water with a TDS 0 and then fill the bucket/container to the 10 litre mark with water (for quickest results heat water anywhere up to 40 ° C). Rinse the product packaging with water from the bucket to make sure all is used.4.) Keep stirring the solution or use a small pump to mix until the solution becomes clear. (# 1 may need longer at a lower temperature)

5.+6.) Once the liquid is clear, store it in a suitable food safe container e.g. 10 litre canister made of HDPE plastic. 7) Rinse the bucket/container with tap water thoroughly before preparing next solution. 8) Then next prepare solutions # 2 and # 3 in same way.



Note: The Essentials can also directly be stored in a 5 or 10 litre container as long as they are HDPE are recognised.

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Start of dosing

To start dosing with ATI Essentials you need to determine the initial starting dose. There are various possibilities. Please note that at the beginning # 1, 2 and 3 Essentials should be dosed in equal amounts. So that when the Essentials # 1 10 ml per day dosing, then dosing of the Essentials # 2 and # 3 also each 10 ml per day.

For those who know their daily KH-consumption, the optimal starting dose can be worked out from the following formula:

36 ml of ATI Essentials increases the KH-value of 100 litres of aquarium water by 1°KH.

The dosage of Essentials # 2 and # 3 are determined from the dosage of Essentials # 1.

For anyone who have previously been dosing a KH-balancing solution according to the following recipe:

420 g $NaHCO_3$ in 5 liters or 840 g $NaHCO_3$ in 10 liters

You should dose as much of each as of the three ATI Essentials that was previously used of KH dosing solution.

Attention: Measure the KH value in the initial phase on a DAILY basis!

If you have not been dosing before the recommended starting dose in the table below should be followed:

Recommended daily starting dose for different types aquariums	
Few coral, new aquariums	5 ml/Essentials/per 100l
Supply Low (soft corals, anemones)	10 ml/Essentials/per 100l
Mixed aquarium (soft corals, LPS, SPS)	25 ml/Essentials/per 100l
Heavy consumption (mainly SPS corals)	50 ml/Essentials/per 100l

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The Classic Application for uniform KH and calcium consumption.

Determination of individual dosage: After the KH value of your aquarium water is set at 7-8 °KH you can now start the dosing of ATI Essentials. To do this, use the previous page to determine dosage amounts:

Day 1:

Be sure to measure KH immediately before starting to dose. Start dosing the same amount of the Essentials # 1, # 2 and # 3

Day 2:

Measure daily the KH value of your aquarium water at the same time of day as day 1. If the KH value is higher, you need less to dose less of the ATI Essentials. If the KH value has fallen, you have to dose more of the ATI Essentials. Check the dosing adjustments needed with the following table:

Amountscorrespondtodosingamountsas per 100ltrs aquariumvolume	
+ 1,0°KH	- 36ml per day Essentials
+ 0,5 °KH	- 18ml per day Essentials
+ 0,2°KH	- 7 ml per day Essentials
- 0,2°KH	+ 7ml per day Essentials
- 0,5 °KH	+ 18ml per day Essentials
- 1,0°KH	+ 36ml per day Essentials

Eg: If your aquarium is 500ltrs and KH has risen + 1.0 °KH. Then calculate 5x -36ml = -180ml so take away 180ml from your daily dosing amount.

Day 3:

Again measure the KH value of your aquarium water at the same time of day. If the KH-value is higher, you need less to dose less of the ATI Essentials. If the KH value has fallen, you have to dose more of the ATI Essentials. Please use the following table to fine tune the dosing amounts:

Amountscorrespondtodosingamountsas per 100ltrs aquariumvolume	
+ 0,3 °KH	- 11 ml per day Essentials
+ 0,2 °KH	- 7 ml per day Essentials
+ 0,1 °KH	- 3 ml per day Essentials
- 0,1 °KH	+ 3 ml per day Essentials
- 0,2 °KH	+ 7 ml per day Essentials
- 0,3 °KH	+ 11 ml per day Essentials

Day 4+5:

Follow same steps as day 3

Day X:

After a few days you should be able to find the correct individual Essentials dosage for your aquarium. This is characterised by a stable KH-value between 7-8 °KH. Now you no longer need to measure the KH value daily. However, since different factors can affect consumption, you should test the KH-value up to 2 to 3 times a week. You should keep a close eye on your calcium levels during the initial stages if they start to rise with a stable KH then see The Alternative Application.

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The Alternative Application: For an uneven consumption of Calcium to Alkalinity.

Some aquariums can have an unbalanced consumption of KH and Calcium (Calcium will rise using the Classic Application).

If after using 'The Classic Application' you find your calcium levels rising you can switch to using 'The Alternative Application method'. With this method the KH and the calcium consumption of your aquarium are individually dosed. To use this method the dosage of Essentials # 1 is still dosed in accordance with the KH-value. The dosage of Essentials # 2 and # 3 will now be dosed in accordance with the calcium consumption level, this determined by measuring/testing calcium levels. The dosage amount of Essentials # 3 will be dosed at the same dosage amount of Essentials # 2!

Determination of individual dosage:

After the KH value of your aquarium water is set at 7-8 °KH and the Calcium concentration is adjusted to 420-440 mg/l, you can start the dosing of ATI Essentials with the Alternative Method.

Day 1:

Start by testing KH and Calcium values. Then start dosing Essentials 1,2+3 equally with an appropriate starting dosage to represent KH consumption. (if needed with help from page 10)

Day 2:

Measure the KH and the Calcium values of your aquarium at the same time of the day as day 1. If the KH-value is higher, you need to dose less of the ATI Essentials # 1. If the KH value has fallen, you need to dose more of the ATI Essentials # 1. If the calcium value has risen, you have to dose less of the ATI Essentials # 2 and # 3. If the calcium value has fallen, you have to dose more of the ATI Essentials # 2 and # 3.

Adjustdosingamountsaccordingtothefollowingtable:

Adjustments correspond to dosing amounts as per 100ltrs aquarium volume First values correspond to KH, second values correspond to Calcium			
+ 1,00°KH	- 36ml per day	+ 5 mg/l	- 25,5ml per day
+ 0,50°KH	- 18ml per day	+ 2,5 mg/l	- 12,5ml per day
+ 0,25 °KH	- 9ml per day	+ 1,0 mg/l	- 5,5ml per day
- 0,25 °KH	+ 9ml per day	- 1,0 mg/l	+ 5,5ml per day
- 0,50°KH	+ 18ml per day	-2,5 mg/l	+ 12,5ml per day
- 1,00°KH	+ 36ml per day	- 5,0 mg/l	+ 25,5ml per day

Day 3:

Measure the KH and the Calcium value of your aquarium water at the same time of the day as previously. If the KH-value is higher, you need to dose less of the ATI Essentials # 1. If the KH value has fallen, you need to dose more of the ATI Essentials # 1. If the calcium value has risen, you have to dose less of the ATI Essentials # 2 and # 3.If the calcium value has fallen you have to dose more of the ATI Essentials # 2 and # 3. Please use the following table to fine tune the dosing amounts:

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Amounts correspond to dosing amounts as per 100ltrs aquarium volume First values correspond to KH, second values correspond to Calcium			
+ 1,00 °KH	- 36 ml per day	+ 5 mg/l	- 25,5 ml per day
+ 0,50 °KH	- 18 ml per day	+ 2,5 mg/l	- 12,5 ml per day
+ 0,25 °KH	- 9 ml per day	+ 1,0 mg/l	- 5,5 ml per day
- 0,25 °KH	+ 9 ml per day	- 1,0 mg/l	+ 5,5 ml per day
- 0,50 °KH	+ 18 ml per day	- 2,5 mg/l	+ 12,5 ml per day
- 1,00 °KH	+ 36 ml per day	- 5,0 mg/l	+ 25,5 ml per day

Eg: If your aquarium is 500 ltrs and KH has risen + 1.0 °KH. Then calculate 5 x -36 ml = -180 ml so take away 180 ml from your daily dosing amount. If calcium has risen +1 mg/l then calculate 5 x 5.5 ml = 27.5 ml so take away 27.5 ml from your daily dosing amount.

Day 4+5:

Follow same steps as day 3.

Day X:

After a few days you should be able to determine individual dosage for your aquarium and find stability. This will be evident by a stable KH value (for example, between 7-8 °KH) and a stable calcium-value (e.g. between 420-440 mg/l). Now you no longer need to measure the values daily. However, since different factors can effect the elements consumption you should measure the KH value up to 2 to 3 times a week and calcium once a week.

Attention:

1.) Different dosage of Essentials # 1 and Essentials 2+3 is normal up to a deviation of 25%. If the deviations exceed 50% please contact us.
2.) Please perform periodic ICP-OES wateranalysis in our laboratory to confirm testing results.
3.) If a newly set up aquarium has matured, or it were changed from a soft coral dominated aquarium to more hard corals, then it's possible to finish the alternative application at any time to the use the classic application instead.

Salinity

The ATI Essentials 1,2+3 combined have a very similar make up to seawater, of which are all mostly consumed by your aquarium inhabitants. However, its possible there may be a slight increase in the salinity of your aquarium water over time. This results in the need to exchange saltwater for fresh water to compensate for the salinity increase. The amount to be removed from the aquarium depends on the added amount from the essentials, against the water removed by the Protein skimmers (skimate). However you can roughly calculate the required withdrawal amount of aquarium water to balance salinity as follows:

As instructed on page 7 mixing the 500ml Essentials solutions is possible in two ways.

1.) 1 to 10 dilution, brings 500 ml Essentials to 5 litres, and 1000 ml Essentials to 10 litres dosing solution.

2.) 1 to 20 dilution (for tanks between 100 and 200 litres recommended), brings 500 ml Essentials to 10 litres.

Salinity corrections will depend on the dilution factor used. If you want to correct salinity daily, calculate amounts per day as per this formula.

1 to 10 dilution

Daily dosing amount of Essentials #2 x 2.15 - minus amount of skimate removed daily.

Eg. If your daily amount of skimate in your skimmer cup is 300 ml, and you are dosing 400 ml of Essentials #2 a day. 400 ml x 2.15 = 866 - 300 ml = 566 ml aquarium water to be removed from system daily

1 to 20 dilution

Daily dosing amount of Essentials #2 x 1.08 - minus amount of skimate removed daily.

Eg. If your daily amount of skimate in your skimmer cup is 300 ml, and you are dosing 400 ml of Essentials #2 a day. 400 ml x 1.08 = 432 - 300 ml = 132 ml aquarium water to be removed from system daily.

If you want to correct the salinity only once a week use this calculation.

1 to 10 dilution

Dosing amount of Essentials #2 x 7x 2,15 - minus amount of skimate removed weekly.

Eg. If your daily amount of skimate in your skimmer cup is 300 ml, and you are dosing 400 ml of Essentials #2 a day. 400 ml x 7 x 2.15 = 6,020 - (7 x 300 ml) = 3920 ml (3.92 ltrs) aquarium water to be removed from system weekly.

1 to 20 dilution

Dosing amount of Essentials #2 x 7x 1,08 - minus amount of skimate removed weekly.

Eg. If your daily amount of skimate in your skimmer cup is 300 ml, and you are dosing 400 ml of Essentials #2 a day. 400 ml x 7 x 1.08 = 3,204 - (7 x 300 ml) = 924 ml of aquarium water to be removed from system weekly.

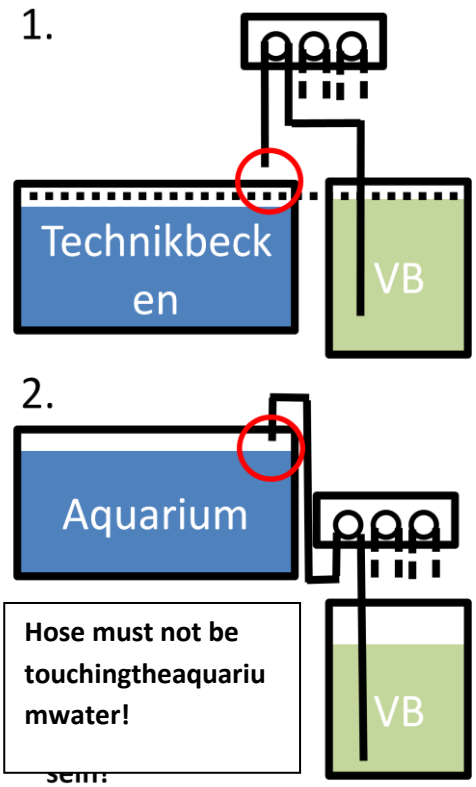
The removal of the aquarium water can be achieved using a dosing pump so it is automated. The fresh water used for adjusting salinity should be from a reverse osmosis system, with a TDS 0 using DI resin filter or Ion exchanger. The salinity of your aquarium water should be checked each week to achieve stability by making fine adjustments. If the salinity increases, you need to add more fresh water. If the salinity decreases, you should add less fresh water.

Attention: If for any reason the salinity decreases. As a counter measure the evaporated water can be replaced with seawater periodically.

The operation of a dosing pump

For the addition of ATI Essentials, we recommend the use of a dosing pump (such as the ATI 6-channel dosing pump). How accurately and reliably a dosing pump works from day to day depends on various key factors.

Installation

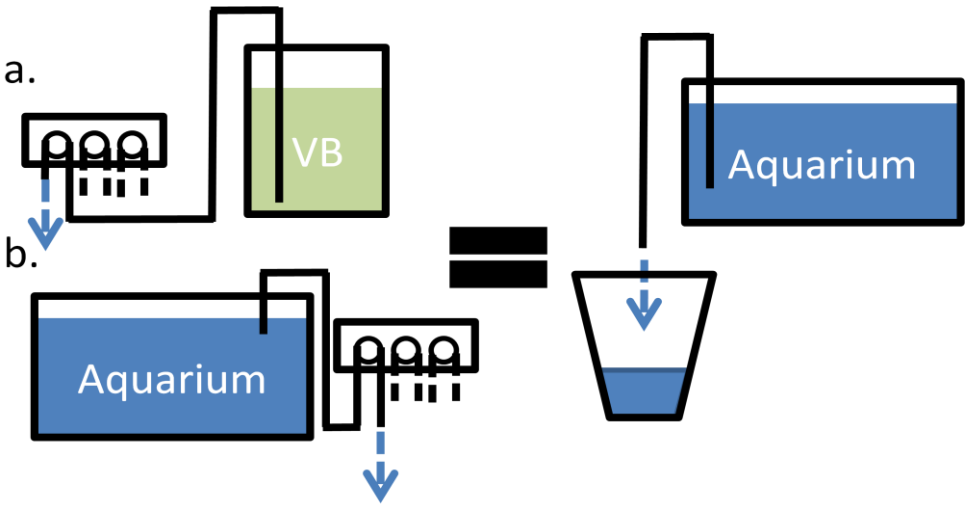


Important: The dosing pump and your outlets should always be above the top level of your Essential dosing solutions(1, 2 and 3). The outlet should also not be in contact with the aquarium water (red circle). The overall difference in heights should be minimal.

Why: If the pump is not positioned correctly the tubes may not be completely shut off when not dosing. If the dosing pump outlets are below the Essentials solutions levels in the storage containers, then siphoning can cause uncontrolled dosing

a.). If the spout is in contact with the aquarium water, they can can also leak

b.). The physical principle behind it is the same as using a siphon on a water change, in which the water from the above aquarium flows into a lower bucket.



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Prevention of back flow

Prevention of back flow as described above can be achieved also by the use of a check valve. We recommend check valves with a silicone lip.

Calibration

The hose length and nature of the solutions to be dosed play a role in how much liquid volume a dosing pump can dose within a certain time. A dosing pump will always need to be regularly calibrated. So a calibration should periodically carried out (for example, 1x month).

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