



## Instructions on the Balling method

The Balling method is a technically mature procedure, tested and proven a thousand times, to resupply your sea water aquarium with the used-up calcium and hydrogen carbonate ions at a low cost!

This elegant and easy-to-use procedure was published by Hans-Werner Balling in 1994 in the technical journal on aquaristics, DATZ (Die Aquarien und Terrarien Zeitung): Balling, H.-W. (1994), Kalkwasser für das Riffaquarium. DATZ 08: 523-525

To use the Balling method, you require the following components:

1. Test kit for calcium and magnesium, as well as a KH test kit
2. A refractometer or a spindle to determine density and/or salinity
3. A scale with 1-2 gramme precision
4. Food-safe canister for the solutions. 5-litre cans have proven to be useful.
5. A calculator that can determine the necessary quantity of the salts. You can download it at [www.matuta.de](http://www.matuta.de) under Balling.

To increase the calcium content you require:

- TIMO Calcium: calcium chloride dihydrate
- TIMO Carbonate: sodium hydrogen carbonate
- TIMO Salt pure: sea salt without sodium chloride

To increase the magnesium content you require:

- TIMO Magnesium 1: magnesium chloride hexahydrate
- TIMO Magnesium 2: magnesium sulphate heptahydrate

All these salts are available at [www.matuta.de](http://www.matuta.de) under the heading Balling.

Measure the carbonate hardness (KH) as well as the magnesium and calcium contents of the tank water. If the carbonate hardness is over 10, one should not add any TIMO Carbonate until the balance is restored and the KH is at 6 - 8.

Magnesium and calcium values are entered into the calculator – together with the net content of the aquarium in litres and the values to be achieved (optimal Mg content approximately 1330 mg, optimal Ca content approximately 420 mg).

The required quantities of TIMO Magnesium 1, magnesium chloride hexahydrate, and TIMO Magnesium 2, magnesium sulphate heptahydrate, to increase the Mg content are now weighed and can now be dissolved in water in one container – ideally osmosis water, or also desalinated water. On the contrary, TIMO Calcium, calcium chloride dihydrate, and TIMO Carbonate, sodium hydrogen carbonate, have to be dissolved und stored in separate containers.

TIMO Calcium, calcium chloride dihydrate, is an irritant and care should be taken to prevent it from getting into your eyes or respiratory tract.  
Keep this chemical out of reach of children.



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The solutions should be added at separate times or at least in different places of the sea water aquarium, so that they do not react with each other and cause precipitations. The application should take place in small doses. In the Balling method all 3 liquids should be given daily and always in such quantities that the water values in the sea water aquarium are kept at a constant level. The time of the day is irrelevant for the application.

In the course of one week, the solutions are added to the tank – either manually or very comfortably with an automatic dosing system.

Besides calcium and hydrogen carbonate ions, chloride and sodium ions, that is common salt, are applied in the Balling method. The latter is not consumed but slowly accumulates in the sea water aquarium. This leads to a migration of the ions and an increased salt content respectively. To prevent this, one can use TIMO Salt pure, sea salt without sodium chloride. This is best done when changing the water of the tank. After the solutions are used up, that is after one week, one should change the water – ideally 10% of the tank's content. Here, the required sea salt is partially replaced by the quantity of TIMO Salt pure, sea salt without sodium chloride, to be found in the calculator.

Please check the salt content regularly with a high quality areometer or refractometer to prevent errors.

On the next day, determine the KH, MG and CA values once again. The new values are entered into the calculator and new solutions are mixed.

The salts, chemicals and liquids of the Balling method cannot deteriorate and can therefore be stored for a long time.

### Note:

- The magnesium value should be determined first, as it helps to stabilise the calcium value. Compared to the calcium value, this value as a rule stays constant for a longer period and need not be increased weekly.
- The water change is a decisive element of the Balling method and must not be neglected.
- It is of equal importance to always measure the values. Never give "blind" doses – too much can cause more damage than too little.