

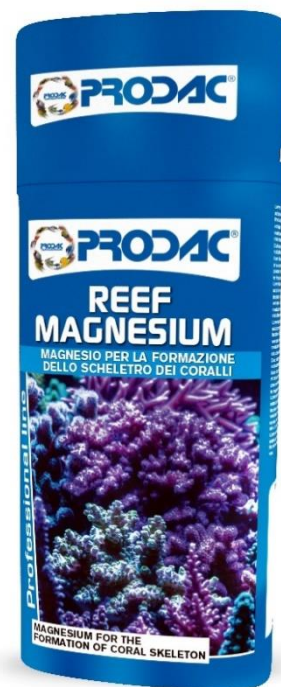
WHAT IS REEF MAGNESIUM?

REEF MAGNESIUM is a concentrated solution of pure magnesium for reef aquariums and for all marine aquariums with invertebrates, studied in our Research and Development laboratory to compensate for sudden drops and magnesium deficiencies. *REEF MAGNESIUM* is essential for the correct formation of the coral skeleton.

Magnesium is one of the basic building blocks for the formation of hard coral skeletons such as LPS and SPS. Adding *REEF MAGNESIUM* helps to maintain the optimal magnesium value between 1100-1350 mg/l.

A low concentration of magnesium makes it difficult to absorb calcium in corals, it is therefore recommended to check the magnesium value before administering the product.

REEF MAGNESIUM contains 3.000 mg/L of Magnesium.



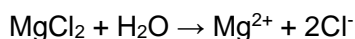
OVERVIEW

To maintain a healthy aquarium, it is necessary to properly maintain the water parameters, which provide a healthy and stable environment for your corals and invertebrates. Of all the elements present in 'natural' sea water, some of them play a role of fundamental importance; these include calcium, magnesium and carbonates. The correct balance between these three elements has an important effect on the biological processes of the coral and on the chemistry of the water.

REEF MAGNESIUM is a liquid source of magnesium. The formulation has been studied to be perfectly assimilable by corals at the times of greatest demand and is in such a form as to be assimilated without requiring too much energy.

Very low levels of magnesium can cause alterations in the pH, KH value and the inability to maintain and correctly absorb the calcium. Magnesium is essential in a reef aquarium, as it keeps the calcium and alkalinity values balanced.

Magnesium chloride (MgCl_2) in water dissociates into magnesium ion and chloride ion; the magnesium ion will be released and dispersed according to the following reaction:



MgCl_2 = magnesium chloride

H_2O = water

Mg^{2+} = magnesium ion (cation)

2Cl^- = chloride ion (anion)

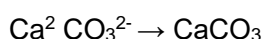
Seawater normally has a very high level of calcium carbonate as water and carbon dioxide form calcium carbonate in the presence of the calcium ion, according to the following reactions:



CO_2 = carbon dioxide

H_2CO_3 = carbonic acid

HCO_3^- = bicarbonate ion (anion)



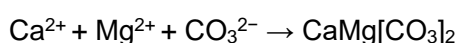
Ca^{2+} = calcium ion (cation)

CO_3^{2-} = carbonate ion (anion)

CaCO_3 = calcium carbonate

Usually the level of calcium carbonate is higher than the level that water is able to maintain balanced and consequently that carbonate if overly present begins to precipitate.

At this point, magnesium comes into play, binding to the surface of the calcium carbonate, preventing its depositing and blocking its precipitation according to the following reaction:



CO_3^{2-} = Carbonate ion

Ca^{2+} = calcium ions (cation)

Mg^{2+} = magnesium ion (cation)

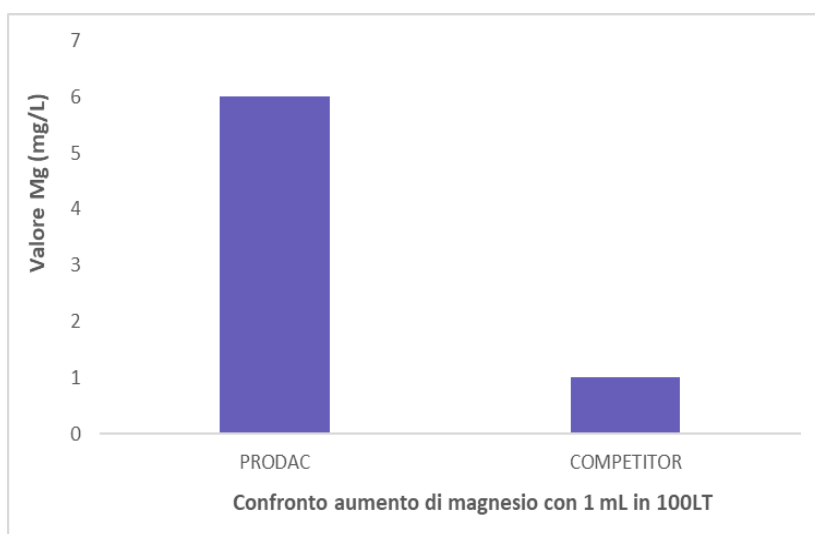
$\text{CaMg}[\text{CO}_3]_2$ = double carbonate of magnesium and calcium

For this reason it is necessary to maintain correct values of magnesium, calcium and KH in order to avoid the production of precipitation and sudden changes in the values of the aquarium water.

HOW IT WORKS

REEF MAGNESIUM contains the same substance that constitutes sea water. Thanks to its formulation it avoids us having to alter the balance of the aquarium and guarantees the health of your inhabitants; moreover it is perfectly assimilable and ready to use.

A healthy reef aquarium depends on the correct and appropriate maintaining of water parameters which in turn provide a stable environment, essential for corals.

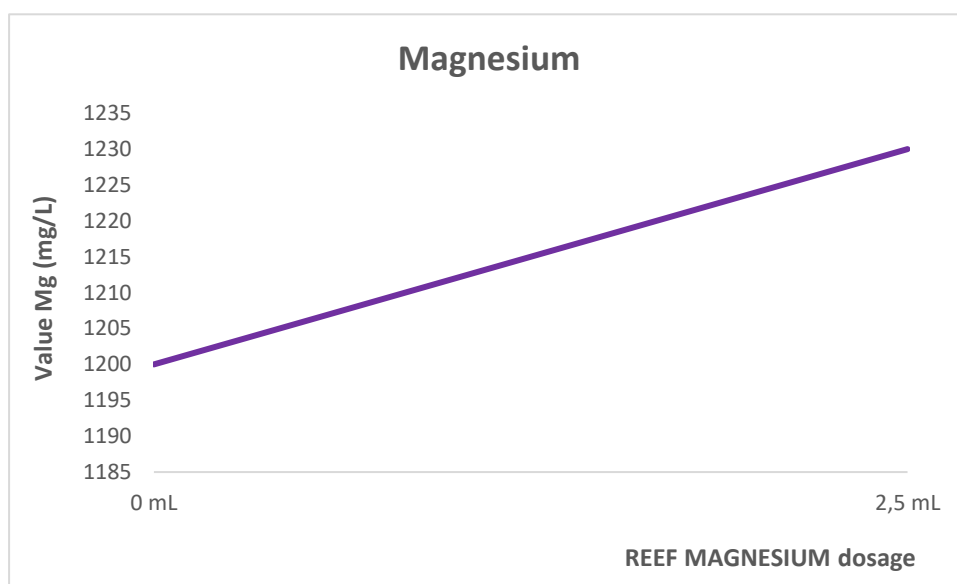


1 mL of *REEF MAGNESIUM* increases in 100L of water 6 mg/L of magnesium, while 1 mL of a competitor product in 100L of water increases only 1 mg/L of magnesium.

TESTS PERFORMED

The test was carried out in a 50 Lt marine aquarium with biological filter consisting of *FILTERWATTE* + *BIOCLARO* + *CRYSTALCIL*, *MAGIC PUMP 350* pump and the water was made with *OCEAN FISH*; the aquarium did not contain fish or corals to demonstrate how *REEF MAGNESIUM* brings about an actual increase in the magnesium value which, in the case of populated aquariums, will be absorbed as required.

We measured the magnesium value in the aquarium and then we administered 2.5 mL of *REEF MAGNESIUM* as per the instructions. Then we measured again the resulting magnesium value in the aquarium and represented with the graph below the values found.



With this test it can be seen how 2.5 mL of *REEF MAGNESIUM* in 50 Lt raised the magnesium value in the aquarium by 30 mg/L.

DISCUSSION

REEF MAGNESIUM is perfectly soluble in water. It immediately makes available an increase in magnesium essential for the correct development of invertebrates and keeps your marine aquarium healthy. It is free from nitrates and phosphates and does not alter the aquarium values (pH and KH).

REEF MAGNESIUM is part of the PRODAC line of trace elements, essential products for the correct maintaining of your marine aquariums.