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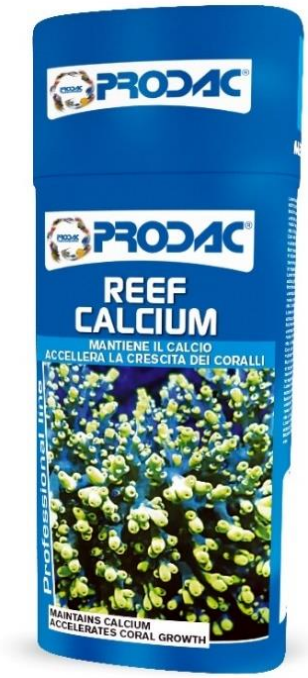
WHAT IS REEF CALCIUM?



REEF CALCIUM is a concentrated solution of pure calcium for reef aquariums and for all marine aquariums with invertebrates, designed in our Research and Development laboratory to compensate for sudden drops and calcium deficiencies. *REEF CALCIUM* is essential to support and promote the development of invertebrates, especially those with hard skeletons such as LPS and SPS.

The skeleton of corals, algae, molluscs and many invertebrates is largely made up of calcium and magnesium carbonates. In the presence of many corals and invertebrates, the calcium level can vary greatly, which is why *REEF CALCIUM* is used to maintain adequate levels of calcium in the aquarium.

REEF CALCIUM provides a rich source of metabolic energy to help coral growth at times of greatest demand, and the formulation is designed to be perfectly absorbable by corals.

A low calcium concentration slows down the growth of corals and calcareous algae. It is therefore necessary to keep the calcium value between 360 - 380 mg/L for aquariums with fish only and 420 - 440 mg/L for various corals.

Hard skeletal invertebrates need calcium for growth so it is advisable to monitor the value with *PRODACTEST Ca* and when necessary increase the calcium value with *REEF CALCIUM*.

REEF CALCIUM contains 47,000 mg/L of Calcium.

OVERVIEW

To have a healthy aquarium which enjoys excellent health, 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 CALCIUM it is a liquid source of calcium that is perfectly assimilable by corals at the times of greatest demand (Calcification) and is in such a form that it can be assimilated without requiring a high energy outlay.

Calcium is an essential nutrient that is absorbed by corals and by other marine invertebrates and plays a vital role in their growth. An imbalance in levels within the marine aquarium can change the alkalinity of the water.

REEF CALCIUM makes calcium immediately available for the aquarium and offers a rich source of metabolic energy, essential to help maintain the coral growth peak and support them in the calcification phase.

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Calcium chloride ($CaCl_2$) in water dissociates into calcium ion and chloride ion; the calcium ion will be released and dispersed according to the following reaction:

$CaCl_2 + H_2O \rightarrow Ca^{2+} + 2Cl^-$

$CaCl_2$ = calcium chloride

H_2O = water

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

$2Cl^-$ = chloride ion (anion)

In the sea, the presence of water and carbon dioxide forms carbonic acid, which at normal ambient pH mainly exists in the form of bicarbonate ion. Bicarbonate ion in the presence of deep water dissociates into carbonate ion according to the following reaction:

$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow HCO_3^- + H^+ \leftrightarrow CO_3^{2-} + 2H^+$

CO_2 = carbon dioxide

H_2O = water

H_2CO_3 = carbonic acid

HCO_3^- = bicarbonate ion (anion)

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

The calcium ion formed in the first reaction combines with the carbonate ion of the second reaction thus creating the calcium carbonate used by stony corals to form their skeleton.

$Ca^2\ CO_3^{2-} \rightarrow CaCO_3$

Ca^2 = calcium ion (cation)

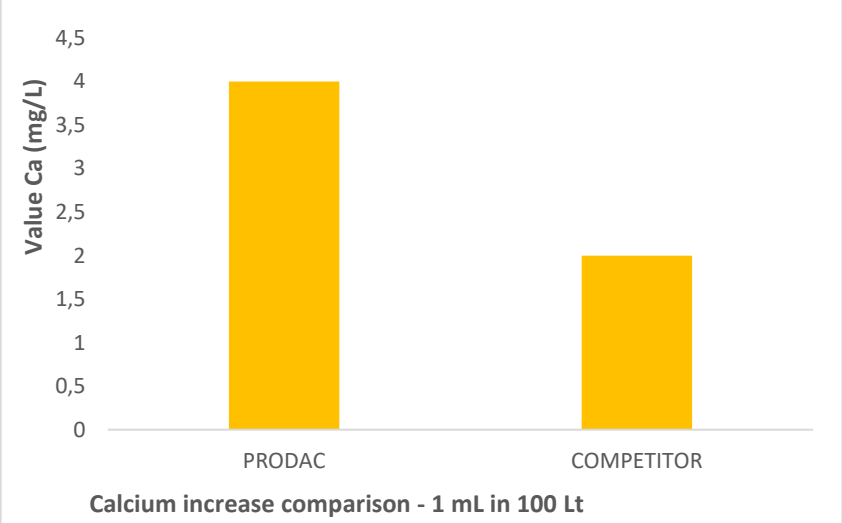
CO_3^{2-} = carbonate ion (anion)

$CaCO_3$ = calcium carbonate

HOW IT WORKS

REEF CALCIUM it contains the same substance that constitutes sea water such as not to alter the balance of the aquarium and guarantees the health of your inhabitants; 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.



Calcium increase comparison - 1 mL in 100 Lt

1 mL of *REEF CALCIUM* increases in 100Lt of water 4 mg/L of calcium while 1 mL of a competitor product in 100 Lt of water increases only 1 mg/L of calcium.

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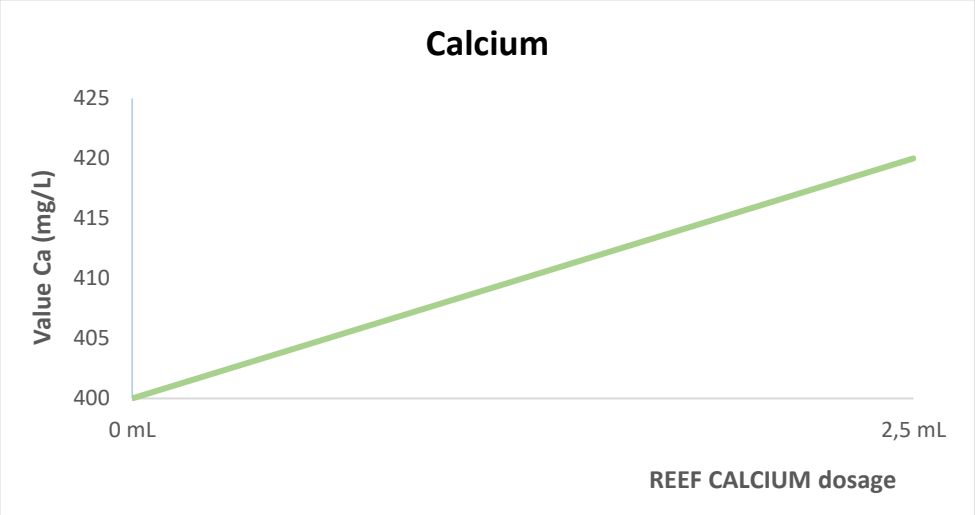
TESTS PERFORMED

The test was carried out in a 50Lt marine aquarium with biological filter consisting of *FILTERWATTE* + *BIOCLARO* + *AQUACIL*, *MAGIC PUMP 350* pump and the water was made with *OCEAN FISH*; the aquarium contained no fish or corals to demonstrate how *REEF CALCIUM* really brings about an increase in the value of calcium which, in the case of populated aquariums, will be absorbed as required.

We measured the calcium value in the aquarium with *PRODACTEST Ca* and then we administered 2.5 mL of *REEF CALCIUM* as per the instructions, then we again measured the resulting calcium 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 CALCIUM* in 50 Lt raised the calcium value in the aquarium by 20 mg/L.

DISCUSSION

REEF CALCIUM is perfectly soluble in water, it immediately makes available an increase in calcium which is 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 CALCIUM is part of the PRODAC line of trace elements, essential products for the correct maintaining of your marine aquariums.