

RED SEA SALTS

The living reef in every harvested grain



Red Sea Salts - Combining Science with Nature

The new formulas of Red Sea and Coral Pro salts are the result of years of research into the physiological demands of corals in the reef aquarium environment. These formulas are made with natural Sodium Chloride from the Red Sea that provides an unparalleled completeness and homogeneity of all trace elements with part of the living reef in every harvested grain.

The unique combination of the formulas and the natural ingredients guarantees coral health and vitality. The new salt formulas are a fundamental part of Red Sea's new Reef Care Program, which provides advanced reef-keeping results for all levels of hobbyist.



The Source of Red Sea Salts

From the clear, unpolluted waters close to the unique living reef of the Red Sea, seawater is pumped through a series of shallow ponds and goes through a natural evaporation process in the hot dry desert sun.

In the first pond the Red Sea water is evaporated from its natural salinity of 40ppt to a salinity of approx 250ppt, precipitating out all of the calcium and heavy metals from the water.

In subsequent ponds, as more water evaporates, sodium chloride crystals begin to form leaving other ions such as Magnesium and Potassium in concentrated brine.



At the end of the evaporation process the remaining brine is drained away leaving behind crystals of raw sodium chloride that undergo a proprietary process of washing and drying to remove organic and other impurities.

The end result is pure, white, food-grade crystals of Sodium Chloride that also include 45 of the other elements that are naturally present in the waters of the Red Sea. This element enriched sodium chloride is the basis for both of Red Sea's salt mixes providing part of the "living reef" inside every grain of harvested salt.



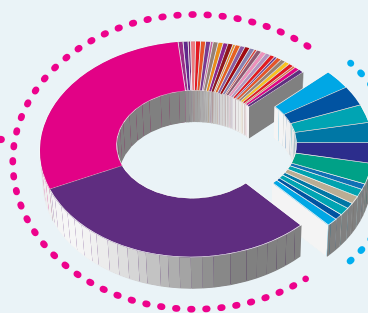
This sodium chloride with its natural array of minor and trace elements, that is free from excessive levels of heavy metals or organics, comprises over 72% of Red Sea's salts and therefore by definition provides a quality and homogeneity of finished product that is unachievable artificially.

The next stage in the process is to add back to the sodium chloride the calcium, magnesium, potassium and all of the other elements in a consistent, homogenous mix. This is achieved by working in small batches with strict quality control.

The absence of excessive levels of heavy metals in our materials obviates the need for chemical binders that significantly affect the function of protein skimmers.

Red Sea Salt
advanced
formula

**Naturally Harvested
Salt from the Red Sea**
Comprises 72% of
the salt mix,
includes 45 Minor
and trace elements



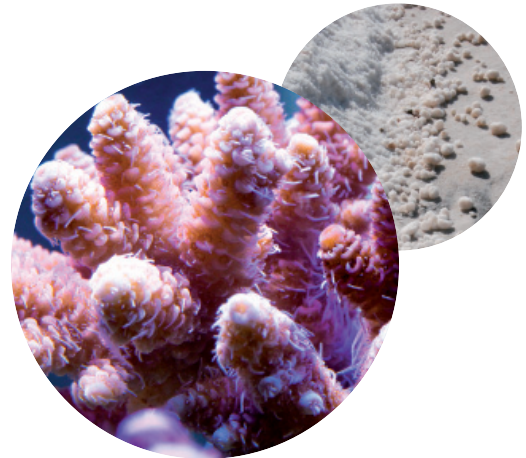
**Other major,
minor and
trace elements**
Comprises 28%
of the salt mix

The Foundation Elements - it's all in the balance

Natural sea water includes over 70 chemical elements and although most of the elements influence the water parameters, a few of them have a more significant role in its overall chemical stability. These elements form the foundation of the reef environment and they include the three major elements, Calcium, Magnesium and Bi-Carbonates.

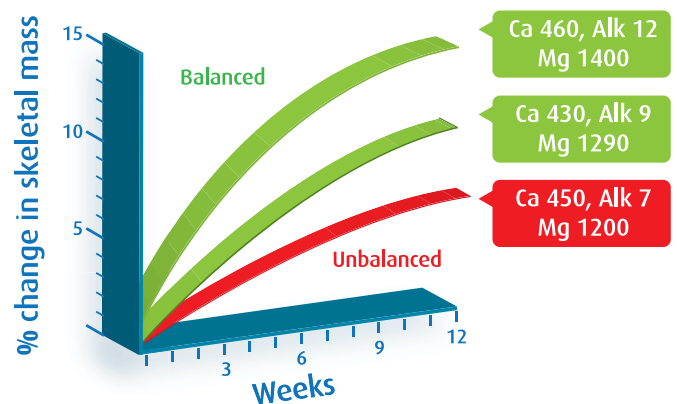
These 3 Foundation elements have a major effect on the water chemistry (pH stability, Alkalinity, sea water ionic strength) and on many of the coral's biological processes (skeleton formation, ions exchange, photosynthesis).

Unlike the natural reef environment, where there is an immense reservoir of the foundation elements, the reef aquarium has limited resources that are quickly depleted by the aquarium inhabitants. Therefore, in order to enable sustainable coral growth, higher than natural levels of the Foundation elements are necessary.



Original research carried out in Red Sea's laboratory has shown that in a closed system aquarium a specific ratio between the foundation elements: calcium, magnesium and carbonates (Alkalinity) is necessary for coral vitality and the formation of a robust aragonite coral skeleton. This ratio must be maintained especially when increasing the levels of the foundation elements above the natural levels.

Using salts, which are made according to these ideal ratios removes the need to adjust the levels of foundation elements after water changes and will significantly improve the well being of all corals.



Tech notes:

Skeletogenesis: Corals build approximately 90% of their skeleton by combining Ca^{2+} and CO_3^{2-} ions from the water to form Aragonite (CaCO_3). The rest of the skeleton is made up from Magnesite (MgCO_3), Strontianite (SrCO_3), Calcite (a more brittle crystal structure of CaCO_3), CaF_2 and other minor and trace minerals. The foundation elements complement each other in the formation of coral skeleton and if not available in the correct ratio one of them will quickly become the limiting factor of healthy coral growth.

Accelerated Coral Growth: Corals need to invest energy in transporting the foundation and other elements necessary for skeletal growth from the surrounding water through their soft tissue. Elevated levels of the foundation elements create a more positive ionic pressure making this process much more efficient (less energy required per gram of skeleton) and therefore balanced, elevated levels of the foundation elements will result in accelerated coral growth rates.

Effects of unbalanced Foundation elements: In low levels of Mg^{2+} and/or Sr^{2+} coral skeleton will develop with a higher proportion of Calcite making it more brittle and more susceptible to damage. Low magnesium or high calcium levels can lead to alkalinity drops. High alkalinity with calcium at saturation levels will cause precipitation, leading to low calcium levels.

Red Sea Salts

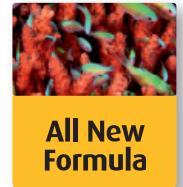
- Living reef in every harvested grain
- From the waters of the exotic Red Sea
- All-natural eco-friendly harvesting
- Biologically balanced levels of foundation elements
- Full complement of trace elements
- Guaranteed parameters for 10liter / 2.5gal mix.
- No Nitrates or Phosphates (Algae Nutrients)
- No toxic levels of Heavy Metals
- No Chemical Binders
- Low moisture content



Supplements

Red Sea Salt

Red Sea Salt is designed to provide the exact parameters of tropical reef water with a slightly elevated alkalinity as needed in a closed marine system. Red Sea salt is ideal for fish and invertebrate systems or for low-nutrient tanks where the hobbyist supplements all of the individual elements on a regular basis.



Recommended usage of Red Sea Salt:

Aquarium Type	Salinity	Alkalinity (°dKH/meq/l)	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Dose
Fish	31.0 ppt	6.8 – 7.2 / 2.4 – 2.5	365 - 385	1090 - 1150	330 - 350	33,4g/l
Non-Coral Inverts	33.5 ppt	7.3 – 7.7 / 2.6 – 2.7	390 - 410	1170 - 1230	360 - 380	36,0g/l
Corals	35.5 ppt	7.8 – 8.2 / 2.8 – 2.9	420 - 440	1250 - 1310	380 - 400	38,2 g/l

Red Sea Salt will produce stable seawater with a pH of 8.2 – 8.4, Parameters are based on dry salt mixed with RO water

Red Sea Coral Pro Salt

Red Sea Coral Pro Salt contains biologically balanced, elevated levels of the foundation elements (Calcium, Magnesium & Carbonates) necessary for sustainable, accelerated coral growth. Coral Pro salt is ideal for reef aquariums, in particular for LPS and SPS corals and growing out coral frags.



Recommended usage of Red Sea Coral Pro Salt:

Aquarium Type	Salinity	Alkalinity (°dKH/meq/l)	Ca (mg/l)	Mg (mg/l)	K (mg/l)	Dose
Fish / Inverts	30.6 ppt	11.3 – 11.7 / 4 – 4.1	400 - 420	1185 - 1245	340 - 360	33,4 g/l
Soft/LPS Corals	33.0 ppt	11.8 – 12.2 / 4.2 – 4.3	430 - 450	1280 - 1340	370 - 390	36,0 g/l
SPS Corals / Clams	35.0 ppt	12.3 – 12.7 / 4.4 – 4.5	455 - 475	1360 - 1420	390 - 410	38,2 g/l

Red Sea Coral Pro Salt will produce stable seawater with a pH of 8.2 – 8.4, Parameters are based on dry salt mixed with RO water



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