



2242 Davis Court, Hayward, CA  
94545-1114, U.S.A.  
Tel. (510) 782-4058, Fax (510) 784-0945  
Toll-Free: (800) 877-7387  
<http://www.novalek.com>

## PRODUCT DATA SHEET

KPD-56

Coral Sea®  
Synthetic Sea Salt

Item Nos. 21003 -10gallon ; 21007 - 25 gallon ; 21015 - 50 gallon ; 21045 - 150 gallon

### PRODUCT DESCRIPTION:

Coral Sea is a single phase synthetic sea salt. Coral Sea has all of the additives currently known to be required to reproduce the physical and chemical qualities of natural sea water and those required for long-term maintenance, growth and reproduction of marine fishes - all in a single mixture. There are no separate "trace element" mixes to be added. This means that whether an entire container of Coral Sea is used, or a part of a container, the resulting sea water will be consistent from gallon to gallon.

It has long been recognized that the requirements for long-term captive maintenance of marine fishes and invertebrates could be easily achieved in sea water containing only those ions known as "major elements", or more correctly, as "major ions". These ions are, in order of highest to lowest concentration: chloride, CL<sup>-</sup>, sodium, NA<sup>+</sup>, magnesium, Mg<sup>++</sup>, sulfate SO<sup>4--</sup>, calcium Ca<sup>++</sup>, potassium, K<sup>+</sup>, and carbonates and bicarbonates, CO<sup>3--</sup> and HCO<sup>3-</sup>. The other major components - water, dissolved oxygen and carbon dioxide, are provided, of course, by the aquarist, filtration and the activities of the bacteria, plants and animals in the aquarium system.

Coral Sea contains a certain number of purposefully added minor and trace ions and exogenous vitamins. All of these added substances have been carefully researched and their presence in Coral Sea justified individually. In order to make Coral Sea the best available sea salt the current literature is constantly being studied and leading experts are consulted in an integrated program of research and development which includes laboratory and field studies. Improvements in the formula, individual component specifications, quality control, and manufacturing and packaging are routinely implemented and improved upon in a process designed to keep Coral Sea the best synthetic sea salt available. These components are those required for the minimal maintenance of the simpler marine organisms (i.e., nitrifying bacteria and algae) and for the development of juvenile stages of some invertebrates (i.e., Artemia brine shrimp, squid, octopuses).

Coral Sea contains a thiosulfate-based chlorine neutralizer. This allows aquarists to utilize freshly made water immediately without additional chlorine neutralization.

Freshly prepared samples of synthetic sea water (made by dissolving 35,00 grams of Coral Sea in enough deionized water to make 1 liter) typically exhibit pHs greater than 8.0 and total acid neutralizing capacity, ANC (alkalinity, or "carbonate hardness") of more than 3.0 milliequivalents per liter (= > 150 mg CaCO<sub>3</sub>/L). The actual values achieved in practical aquarium use will depend upon the quality and chemistry of the water used to dissolve the Coral Sea. In addition, the pH and ANC of the resultant mix of new and old water, following partial water changes, will depend upon the chemistry of the remaining old water, the chemistry of the freshly made water, and the conditions of the aquarium's filtration and plant and animal load. The use of deionized, or other purified water (i.e., distilled or reverse osmosis, RO, water) will provide the aquarist with freshly prepared synthetic sea water which will be consistent from batch to batch.

Most synthetic sea salts, even the so-called "premium" mixes, exhibit initial haziness, cloudiness or turbidity immediately following mixing with water. Coral Sea will exhibit a similar initial haziness, but absolute clarity will quickly be achieved after addition to the aquarium (given appropriate aeration and filtration).



**NOVALEK, INC.**

2242 Davis Court, Hayward, CA  
94545-1114, U.S.A.  
Tel. (510) 782-4058, Fax (510)784-0945  
Toll-Free: (800) 877-7387

### **SPECIFICATIONS**

Coral Sea contains the following elements and ingredients\*:

Chlorine (as chloride, Cl<sup>-</sup>): 40%  
Sodium, Na<sup>+</sup>: > 20%  
Magnesium, Mg<sup>++</sup>: > 5%  
Sulfur (as sulfate, SO<sub>4</sub><sup>--</sup>, thiosulfate, S<sub>2</sub>O<sub>3</sub><sup>--</sup>, thiamine and biotin): > 3%  
Calcium, Ca<sup>++</sup>: < 1%  
Potassium, K<sup>+</sup>: < 1%  
Bromine (as bromide, Br): > 0.3%  
Carbon (as bicarbonate, HC<sub>3</sub><sup>-</sup>, thiamine, biotin and cyanocobalamin): < 0.1%  
Strontium, Sr<sup>++</sup>: > 0.01%  
Boron (as borate, BO<sub>3</sub><sup>--</sup>): > 0.004%  
Fluorine (as fluoride, F): < 0.002%  
Nitrogen (as nitrate, NO<sub>3</sub><sup>-</sup>, thiamine biotin and cyanocobalamin): < 0.002%  
Phosphorus (as phosphate, PO<sub>4</sub><sup>---</sup>, and canocobalamin): < 0.002%  
Manganese, Mn<sup>++</sup>: < .001%  
Silicon (as silicate, SiO<sub>3</sub><sup>--</sup>): > 0.001%  
Barium, Ba<sup>++</sup>: < 0.0005%  
Molybdenum (as molybdate, MoO<sub>4</sub><sup>--</sup>): > 0.0003%  
Lithium, Li<sup>+</sup>: < 0.0003%  
Aluminum, Al<sup>---</sup>: < 0.0002%  
Iron, Fe<sup>+++</sup>: 0.0002%  
Thiamine (vitamin B1) > 0.0001%  
Rubidium, Rb<sup>+</sup>: > 0.00009%  
Iodine (as iodide, I<sup>-</sup>): < 0.00005%  
Vanadium (as vanadyl, VO<sup>--</sup>): < 0.00005%  
Zinc, Zn<sup>++</sup>: < 0.00002%  
Cobalt, (as Co<sup>++</sup> and cyanocobalamin): < 0.00002%  
Copper, Cu<sup>++</sup>: < 0.000002%  
Biotin: < 0.000001%  
Cyanocobalamin (vitamin B12): < 0.000001%

\*remaining percentage, 30.5 is made up of oxygen and hydrogen which are combined in anions and water of crystallization.

---

### **SUGGESTED USAGE**

In marine aquariums designed only for fishes and other higher invertebrates, it is only necessary to add sufficient Coral Sea to achieve a salinity of specific gravity value suitable for their long-term maintenance. For marine fishes, it is suggested that the specific gravity be kept between 1.018 and 1.022. For the long-term maintenance of marine invertebrates or populations of fishes with invertebrates, a specific gravity of 1.021 to 1.025 should prove best. Lower values of specific gravity will aid significantly in the prevention of many parasitic diseases (i.e., cryptocaryoniasis or saltwater ich): use should be monitored against the health and behavior of the aquarium inhabitants.

Add Coral Sea at a rate of 0.3 lb (136 grams) to each gallon of water; this is equivalent to approximately 36 grams per liter of water. This will result in a specific gravity between 1.020 and 1.025, and either additional Coral Sea or water should be added as needed to achieve the desired final specific gravity or salinity. The use of accurate hydrometers is highly recommended; as an alternative, a suitable refractometer is best.



2242 Davis Court, Hayward, CA  
94545-1114, U.S.A.  
Tel. (510) 782-4058, Fax (510)784-0945  
Toll-Free: (800) 877-7387

Dissolving the salt with the aid of stirring or vigorous aeration is best, but not required. The best practice is to allow the salt to completely dissolve before adding it to an aquarium containing animals. Any initial turbidity will quickly dissipate.

---

#### **STABILITY**

The dry (as packaged) Coral Sea is stable indefinitely. Tests to determine effects of long-term storage are in progress; to date, there are no indications that prolonged storage effects product quality.

Once opened, the contents of the Coral Sea package should be used as soon as possible, if the contents cannot be used immediately, then the package should be resealed as well as possible to prevent the naturally hygroscopic salts in the Coral Sea formula from absorbing moisture from the air.

If the material in a previously opened package becomes either hard or wet and sticky, its efficacy as a synthetic sea salt mix is not compromised, but the estimate of appropriate weights (see below, SUGGESTED USAGE) will be more difficult. It is likely that slightly more product would need to be added to achieve the desired salinity and/or specific gravity.

---

#### **COMPATIBILITIES**

Sea water made with Coral Sea is compatible with all known medicinal dyes (i.e., malachite green, methylene blue, acriflavine) and formaldehyde (i.e., formalin and formalin/malachite green). CORAL SEA is fully compatible with Kordon's AmQuel®, PolyAqua® and NovAqua® (NOTE; the addition of NovAqua to seawater will usually cause a temporary precipitate to form, but this is harmless and does not interfere with its action).

Test kits designed strictly for use in fresh water may not perform the same, or as expected, in sea water. These include nitrate tests which use a cadmium metal reduction, and certain Nessler's ammonia tests, salicylate ammonia tests, and pH tests. Many test kits have instructions (e.g., mathematical conversion factors, special auxiliary reagents) which allow the aquarist to compensate for any interference.

Clarifying agents designed specifically for freshwater, should not be used in sea water. For intermittent turbidity the use of Kordon's Sea Clear is recommended.

Granular activated carbons will function well in sea water made from Coral Sea, but ion-exchange resins and ammonia-absorbing zeolites (i.e., clinoptilolite), will not perform as desired or expected, as is the case in all sea waters. It is recommended that filtration with granular activated carbon not be started in a newly set up marine aquarium until the biological filtration has been established and is functioning as required. (This is to prevent the removal of key trace elements and compounds from the new sea water which will assist in the establishment of viable biological filter).

The use of trace element additives is not recommended in any sea water aquarium unless the aquarist is attempting to grow the higher marine algae (i.e., Caulerpa), to culture planktonic algae, or to spawn and raise marine fishes or invertebrates. The addition of organic compounds (i.e.,



2242 Davis Court, Hayward, CA  
94545-1114, U.S.A.  
Tel. (510) 782-4058, Fax (510)784-0945  
Toll-Free: (800) 877-7387

amino acids) except for certain vitamins (thiamine, biotin and cyanocobalamin), which are required for most marine algal species, is not recommended. When trace elements/vitamin replenishment is required, it is recommended that Kordon's Reef Nutrient be used as directed.

---

#### **ADDITIONAL INFORMATION**

**Dissolved Oxygen:** The levels of oxygen dissolved in sea water that is available for bacteria, plant and animal respiration is inversely proportional to both the specific gravity and the temperature. See the table below.

**Ammonia toxicity:** The equilibrium which exists between ionized ammonia or ammonium ion,  $\text{NH}_4^+$ , and free ammonia  $\text{NH}_3$  (the toxic form) is affected most strongly by pH (higher pH's cause a greater percentage to exist as the free form), but it is also affected by salinity and temperature. The higher the salinity the lower the percentage of free ammonia, and the higher the temperature the higher the free ammonia levels. Appropriate tables exist that show these relationships.

**Specific gravity, salinity and chlorinity:** The terms used to report the amounts of substances dissolved in sea water are often misunderstood by aquarists.

Specific gravity is the ratio of the density (in grams per milliliter g/mL, or kilograms per liter, kg/L) of a given volume of sea water to the density of an equal volume of pure water at 4° C. Specific gravity, therefore, is a dimensionless value. The terms "specific gravity" and "density" are often used as if identical.

Salinity is defined as the total amount of solids (with all carbonates converted to oxides, and bromides and iodides replaced by chlorides) dissolved in a kg of sea water. The units are grams per kilogram, g/kg, or parts per thousand, ppt (0/00)\*. This is most commonly measured by use of a refractometer. Note: The term "salinity" is often misused for specific gravity (see below) which it is not.

Chlorinity is a measure of the amounts of chlorides, bromides and iodides present in sea water. It is determined by chemical means and is related to salinity by the following equation:

$$\text{Salinity (0/00)} = 1.80655 \times \text{Chlorinity (0/00)} \text{ and } \text{Chlorinity (0/00)} = \text{Salinity (0/00)} / 1.80655$$

#### **CAUTIONS**

Use care when handling the dry Coral Sea product. Prolonged contact with skin, especially by certain highly sensitive individuals, might cause rash, redness or itching. Wash thoroughly after handling. Avoid breathing dust.