



# REEF MASTER TEST KIT

**TESTS CALCIUM, CARBONATE HARDNESS  
PHOSPHATE & NITRATE**

• Fast • Easy • Accurate

**MESURE CALCIUM, DURETÉ CARBONATÉE,  
PHOSPHATES & NITRATES**

• Rapide • Simple • Précis

**EN** Instructions  
in English

**FR** Instructions  
en français

**ES** Instrucciones  
en español

**中文** 中文说明

Includes: 7 Test Bottles, Easy-to-Read Instructions,  
Glass Test Tubes & Color Chart

**GUIDE**



Regular  
Care



Water Problem  
Solving



## ENGLISH



**To remove childproof safety caps:** With one hand, push red tab left with thumb while unscrewing cap with free hand.

## CALCIUM TEST

### Why Test for Calcium?

Monitoring calcium levels is essential for keeping a successful reef aquarium. Corals and reef invertebrates, such as shrimp, crabs, mollusks and encrusting algae, require calcium to grow and remain healthy. The calcium level drops as it is used by invertebrates or as it reacts with excess phosphate.

### Testing Tips

Having an adequate calcium level is not enough to achieve healthy coral growth, because the growth of corals is also linked to the carbonate hardness (often referred to as KH or alkalinity). All reef organisms rely on the combination of calcium and carbonate to build their skeleton structure by extracting these substances from saltwater. These two building blocks are essential for the growth of corals, crustaceans, mollusks, coralline algae and calcareous forms of macroalgae. So testing for both carbonate hardness and calcium is necessary for successful reef keeping. This test kit reads the calcium concentration in parts per million (ppm), which is equivalent milligrams per liter (mg/L).

### Directions

1. Fill a clean test tube with 5 ml of water to be tested (to the line on the tube).
2. Holding the bottle vertically, **add 10 drops of Calcium Test**

- Solution #1**, cap the test tube and shake for 10 seconds.
3. **Shake Calcium Test Solution #2 vigorously for 10 seconds.**
4. Holding the bottle vertically, **add Calcium Test Solution #2, drop by drop** to the test tube until the solution changes from pink to the blue endpoint. **Be sure to count the number of drops added.** Cap and shake the test tube between drops.
5. As the endpoint is approached, the color will usually change from pink to purple before finally changing to blue. After the purple color forms, only 1-2 more drops should be required to reach the blue endpoint. **See the Calcium (Ca<sup>2+</sup>) Conversion Chart at the end of instructions.**



### ENDPOINT COLOR

**NOTE:** To save time, if you think that the salt water being tested contains about 400 mg/L (ppm) calcium, you can add 15 drops of Calcium Test Solution #2 at once, as indicated in Step 4, then cap and shake. If the solution is pink, continue adding drops, one at a time, until the end point is reached. If the solution is blue, then too many drops were added initially, and the test must be repeated.

### What the Test Results Mean

Reef aquariums should have a calcium (Ca<sup>2+</sup>) concentration of between 400 to 500 mg/L (ppm).

### Increasing Calcium Levels

Making a partial water change may help to maintain proper calcium levels, depending on the brand of salt mix. Use API MARINE CALCIUM to increase the calcium level. Reducing phosphate may also help. Elevated phosphate precipitates calcium, rendering it unavailable to reef organisms. Phosphate

enters the aquarium from tap water and as a byproduct of fish and invertebrate metabolism. Add API PHOS-ZORB®/PREVENT ALGAE to the filter to remove excess phosphate.

### DANGER



#### CALCIUM TEST SOLUTION #1

May be corrosive to metals • Causes severe skin burns and eye damage • Causes serious eye damage • Do not breathe dust / fume / gas / mist / vapors / spray • Wear protective gloves / protective clothes / eye protection / face protection • Keep only in original container • IF SWALLOWED: Rinse mouth • DO NOT induce vomiting • IF ON SKIN (or hair): Take off immediately all contaminated clothing • Rinse skin with water/shower • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing • Immediately call a POISON CENTER/Doctor/Physician/first aider • Specific treatment [see advice on this label] • Wash contaminated clothing before reuse • Absorb spillage to prevent material damage • IF INHALED: Remove person to fresh air and keep comfortable for breathing • Store locked up • Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration.

### WARNING



#### CALCIUM TEST SOLUTION #2

May cause an allergic skin reaction • Wear protective gloves/protective clothes/eye protection/face protection • Avoid breathing dust / fume / gas / mist / vapors / spray • Contaminated work clothing should not be allowed out of the workplace • Specific treatment [see advice on this label] • IF ON SKIN: Wash with plenty of water and soap • If skin irritation or rash occurs: Get medical advice/attention • Take off contaminated clothing and wash it before reuse • Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration.

## CARBONATE HARDNESS (KH) TEST

### Why Test for KH (Carbonate Hardness)?

Tap water rarely provides the water conditions necessary to maintain an optimal aquarium. Some tap water supplies have very low KH (below 3 °dKH) which can contribute to wide pH swings in the aquarium.

### Directions

1. Fill a clean test tube with 5 ml of water to be tested (to the line on the tube).
2. Holding the bottle vertically, **add KH Test Solution, 1 drop at a time. Be sure to count the number of drops being added.**
3. Cap test tube & invert several times after each drop.
4. The test is completed when the water in the test tube, after having been shaken, turns from blue to yellow. If you have difficulty discerning the color after the first drop of test solution is added, remove the cap from the test tube and, while holding it over a white background, look down through the tube.
5. The KH value is determined by the number of drops of test solution that must be added to turn the water in the test tube bright yellow. **See KH Conversion Chart at end of instructions to determine KH level.**

### Adjusting KH

Partial water changes can be used to decrease KH. To increase KH use API PROPER pH 8.2, a carbonate buffer suitable for marine and reef aquariums.

## PHOSPHATE TEST

### Why Test for Phosphate?

Phosphate ( $\text{PO}_4^{3-}$ ) enters the aquarium from fish and invertebrate waste and decaying organic matter, such as dead algae and uneaten fish food. Water treatment facilities may add phosphate to tap water to prevent pipe corrosion and reduce concentrations of heavy metals in drinking water. Some salt mixes also contain phosphates. Excess phosphate may lead to algae blooms. In saltwater aquariums, phosphate precipitates dissolved calcium ( $\text{Ca}^{2+}$ ) and magnesium ( $\text{Mg}^{2+}$ ) ions, inhibiting the growth of hard corals and other reef-building organisms.

### Testing Tips

This test kit reads the total phosphate level in parts per million (ppm), which are equivalent to milligrams per liter (mg/L) from 0 - 10.0 ppm (mg/L).

### Directions

1. Fill a clean test tube with 5 ml of water to be tested (to the line on the tube).
2. Holding the bottle vertically, **add 6 drops from Phosphate Test Solution #1**. Cap the test tube and shake vigorously for 5 seconds.
3. Now, holding the bottle vertically, **add 6 drops from Phosphate Test Solution #2**.  
**Note:** Test Solution #2 is a very thick solution and may require increased pressure to release drops.
4. Cap and shake the test tube vigorously for 5 seconds.
5. **Wait 3 minutes for color to develop.**
6. Read the test results by comparing the color of the solution to the Phosphate Color Card. The tube should

be viewed in a well-lit area against the white area of the card. The closest match indicates the ppm (mg/L) of total phosphate ( $\text{PO}_4^{3-}$ ) in the water sample. Rinse the test tube with clean water after use.

### What the Test Results Mean

Ideally, the phosphate level should be 0. The phosphate level in a new aquarium will depend on the purity of the water used to fill the aquarium. The phosphate level in tap water can vary daily depending on the treatment process used. Phosphate tends to accumulate in established aquariums.

### Reducing Phosphate Levels

To quickly reduce phosphate, perform a partial water change. Remove any dirt and uneaten fish food from the bottom of the aquarium and change 25-50% of the water, depending on the phosphate concentration. To continually remove phosphate from the aquarium, add API PHOS-ZORB® / PREVENT ALGAE to the filter.

## DANGER



### PHOSPHATE TEST SOLUTION #1

May be corrosive to metals • Fatal if inhaled • Causes skin burns and eye damage • Causes serious eye damage • May cause damage to organs through prolonged or repeated exposure • Do not breathe dust / fume / gas / mist / vapors / spray • Use only in outdoors or in a well-ventilated area • Wear protective gloves / protective clothes / eye protection / face protection • Keep only in original container • In case of inadequate ventilation, wear respiratory protection • If SWALLOWED: Rinse mouth • Do NOT induce vomiting • IF ON SKIN (or hair): Take off immediately all contaminated clothing • Rinse skin with water/shower • IF INHALED: Remove person to fresh air and keep comfortable for breathing • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing • Immediately call a POISON CENTER / Doctor / physician / first aider • Specific treatment is urgent (see advice on this label) • Wash contaminated clothing before reuse • Absorb spillage to prevent material damage • Store in a well-ventilated place • Keep container tightly closed • Store locked up • Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration.

## NITRATE TEST

### Why Test for Nitrate?

Nitrate ( $\text{NO}_3^-$ ) is produced in the aquarium by the biological filter. Beneficial bacteria in the biological filter convert toxic ammonia and nitrite into nitrate. A high nitrate level indicates a build-up of

fish waste and organic compounds, resulting in poor water quality and contributing to the likelihood of fish disease. Maintaining a low nitrate level improves the health of fish & invertebrates. Excessive nitrate also provides a nitrogen source that can stimulate algal blooms. Aquarium water should be tested for nitrate once a week to make sure the nitrate does not reach an undesirable level.

**Testing Tip:** This test kit reads total nitrate ( $\text{NO}_3^-$ ) level in parts per million (ppm) which are equivalent to milligrams per liter (mg/L) from 0 - 160 ppm.

### Directions

1. Fill a clean test tube with 5 ml of water to be tested (to the line on the tube).
2. **Add 10 drops from Nitrate Test Solution #1**, holding dropper bottle upside down in a completely vertical position to assure uniformity of drops.
3. Cap the test tube & invert tube several times to mix solution.
4. **Vigorously shake the Nitrate Test Solution #2 for at least 30 seconds. This step is extremely important to insure accuracy of test results.**
5. **Now add 10 drops from Nitrate Test Solution #2**, holding dropper bottle upside down in a completely vertical position to assure uniformity of drops.
6. **Cap the test tube and shake vigorously for 1 minute. This step is extremely important to insure accuracy of test results.**
7. **Wait 5 minutes for the color to develop.**
8. Read the test results by comparing the color of the solution to the Nitrate Color Chart. The tube should be viewed in a well-lit area against the white area of the card. The closest match indicates the ppm (mg/L) of nitrate in the water sample. Rinse the test tube with clean water after use.

## What the Test Results Mean

In new aquariums the nitrate level will gradually climb as the biological filter becomes established. In marine aquariums, it is best to keep nitrate as low as possible, especially when keeping invertebrates.

## Reducing Nitrate Levels

Making partial water changes can help reduce nitrate, especially if the level is very high. However, because many tap water supplies contain nitrate, it can be difficult to lower nitrate levels by this method.

## WARNING



### NITRATE TEST SOLUTION #2

Suspected of causing genetic defects • Wear protective gloves/protective clothes/eye protection / face protection • If exposed or concerned: Get medical advice / attention • Store locked up • Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration.

## DANGER



### NITRATE TEST SOLUTION #1

May be corrosive to metals • Harmful if inhaled • Causes severe skin and eye damage. Causes serious eye irritation • May cause respiratory irritation • Do not breathe dust / fume / gas / mist / vapors / spray • Use only in outdoors or in a well-ventilated area. Wear protective gloves / protective clothes / eye protection / face protection • Keep only in original container • IF SWALLOWED: Rinse mouth. DO NOT induce vomiting • IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower • IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing • Immediately call a POISON CENTER / Doctor / physician / first aider • Specific treatment (see advice on this label) • If eye irritation persists: Get medical advice/attention • Wash contaminated clothing before use • Absorb spillage to prevent material damage • IF INHALED: Remove person to fresh air and keep comfortable for breathing • Store locked up • Store in a well-ventilated place • Keep container tightly closed • Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration.

**CALCIUM (Ca<sup>2+</sup>) CONVERSION CHART**

# of Drops	mg/L (ppm) Calcium	# of Drops	mg/L (ppm) Calcium
1	20	14	280
2	40	15	300
3	60	16	320
4	80	17	340
5	100	18	360
6	120	19	380
7	140	20	400
8	160	21	420
9	180	22	440
10	200	23	460
11	220	24	480
12	240	25	500
13	260	26	520

**KH CONVERSION CHART**

# of Drops	°dKH	ppm KH
1	1	17.9
2	2	35.8
3	3	53.7
4	4	71.6
5	5	89.5
6	6	107.4
7	7	125.3
8	8	143.2
9	9	161.1
10	10	179
11	11	196.9
12	12	214.8

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