

# 5 IN 1 AQUARIUM TEST STRIPS

## Diagnostic Chart

pH TEST		6.0	6.5	7.0	7.5	8.0	8.5	9.0	RECOMMENDATION
AQUARIUM	Freshwater Tropical & Betta	Red	Yellow	Green	Yellow	Yellow	Red	Red	To adjust pH, use API PROPER pH 7.0
	African cichlid	Red	Red	Yellow	Yellow	Green	Green	Green	To adjust pH, use API PROPER pH 8.2
	Goldfish	Red	Yellow	Green	Yellow	Yellow	Yellow	Yellow	To adjust pH, use API PROPER pH 7.5
	Salt water	Red	Red	Red	Yellow	Green	Green	Yellow	To adjust pH, use API PROPER pH 8.2
NITRITE TEST		0.0	0.5	1.0	3.0	5.0	10.0	RECOMMENDATION	
AQUARIUM	Freshwater Tropical & Betta	Green	Yellow	Yellow	Red	Red	Red	Red	Partial water change, then treat with API QUICK START and AQUARIUM SALT
	African cichlid	Green	Yellow	Yellow	Red	Red	Red	Red	Partial water change, then treat with API QUICK START and AQUARIUM SALT
	Goldfish	Green	Yellow	Yellow	Red	Red	Red	Red	Partial water change, then treat with API QUICK START and AQUARIUM SALT
	Salt water	Green	Yellow	Yellow	Red	Red	Red	Red	Partial water change, then treat with API QUICK START
NITRATE TEST		0	20	40	80	160	200	RECOMMENDATION	
AQUARIUM	Freshwater Tropical & Betta	Green	Green	Green	Yellow	Red	Red	Red	Partial water change and add NITRA-ZORB (AQUA-DETOX) to the filter
	African cichlid	Green	Green	Green	Yellow	Red	Red	Red	Partial water change and add NITRA-ZORB (AQUA-DETOX) to the filter
	Goldfish	Green	Green	Green	Yellow	Red	Red	Red	Partial water change and add NITRA-ZORB (AQUA-DETOX) to the filter
	Salt water	Green	Yellow	Yellow	Red	Red	Red	Red	Partial water change
GENERAL HARDNESS (GH) TEST		0	30	60	120	180	RECOMMENDATION		
AQUARIUM	Freshwater Tropical & Betta	Red	Green	Green	Green	Yellow	Yellow	Yellow	For high GH, partial water changes may help if the source water has low GH
	African cichlid	Red	Red	Yellow	Yellow	Green	Green	Green	To raise GH, use API AFRICAN MINERAL SALTS
	Goldfish	Red	Yellow	Yellow	Green	Green	Green	Green	For high GH, partial water changes may help if the source water has low GH
	Salt water	The GH of salt water is above the range of this test							
CARBONATE HARDNESS (KH) TEST		0	40	80	120	180	240	RECOMMENDATION	
AQUARIUM	Freshwater Tropical & Betta	Red	Yellow	Green	Green	Yellow	Yellow	Yellow	To raise KH, make a partial water change, use API PROPER pH 7.0
	African cichlid	Red	Red	Red	Yellow	Green	Green	Green	To raise KH, make a partial water change, use API PROPER PH 8.2
	Goldfish	Red	Yellow	Yellow	Green	Green	Green	Green	To raise KH, make a partial water change, use API PROPER pH 7.5
	Salt water	Red	Red	Yellow	Green	Green	Green	Green	To raise KH, make a partial water change, use API PROPER pH 8.2

**TIP:** We also recommend testing for ammonia using the API Ammonia Test Strips or Kit. For all aquariums, the ideal ammonia level is 0 ppm.

KEY	
IDEAL	
DANGER	
CAUTION (CONTINUE TO MONITOR)	

## Understanding Test Results & Correcting Unsafe Water Conditions

pH TEST	GENERAL HARDNESS (GH) TEST																		
<p><b>What the Test Results Mean</b></p> <p><b>Recommended pH Levels</b> A pH of 6.8 - 7.2 is ideal when keeping a community aquarium containing a variety of tropical fish. Goldfish should be kept in their own aquarium and prefer a pH of 7.5. Many Amazonian fish, like angelfish and neon tetras, prefer a pH of 6.5 - 6.8. Mollies and swordtails thrive at pH 7.2 - 7.5. Most African cichlids need a pH of 8.2 or higher. To raise or lower pH in a freshwater aquarium, use API® PROPER pH® 6.5, 7.0 or 7.5 to automatically adjust the pH to the appropriate level. API PROPER pH 8.2 is a carbonate buffer that can be used to raise aquarium water to the correct pH for African cichlids. A pH of 8.2 - 8.4 is ideal for saltwater fish and invertebrates. Use API PROPER pH 8.2, to adjust the pH in saltwater and reef aquariums.</p> <p><b>Why Test pH?</b> In order for your fish to thrive, it is important to maintain the pH in the aquarium at a level similar to their native habitat. pH is the measure of the acidity of water. A pH reading of 7.0 is neutral, a pH above 7.0 is alkaline and a pH below 7.0 is acidic. The water in the natural habitat of some species is neutral, while that of other species is either acidic or alkaline. Most freshwater fish will thrive at a pH range of 6.8 - 7.5. The pH of natural ocean water is between 8.2 - 8.4; therefore, saltwater fish and invertebrates should be kept in that range.</p> <p><b>Testing Tips</b></p> <ul style="list-style-type: none"> <li>The pH should be tested weekly, since natural materials in the aquarium, such as fish waste and decaying food, can cause changes in pH over time.</li> <li>This test kit measures pH from 6.0 - 9.0 in fresh and saltwater. pH below 6.0 will read 6.0 and pH above 9.0 will read 9.0. In these extreme conditions, pH adjustments to the water will not show any change until the pH is within the range of this kit.</li> <li>Be sure to use the freshwater color chart when testing freshwater and the saltwater chart when testing salt water.</li> </ul>	<p><b>What the Test Results Mean</b></p> <p>The table below is a guide to the desired General Hardness (GH) for certain common tropical fish and live plants:</p> <table border="1"> <thead> <tr> <th>ppm (mg/L)</th> <th>°dGH</th> <th>Type of fish</th> </tr> </thead> <tbody> <tr> <td>30</td> <td>1.7°</td> <td>Discus, arowanas, neons, elephant nose, cardinals, live plants</td> </tr> <tr> <td>60</td> <td>3.4°</td> <td>Most tropical fish, including angelfish, tetras, botia, community aquariums, live plants</td> </tr> <tr> <td>120</td> <td>6.7°</td> <td>Most tropical fish, including swordtails, guppies, mollies, cichlids, goldfish</td> </tr> <tr> <td>180</td> <td>10°</td> <td>African Cichlids, goldfish</td> </tr> </tbody> </table> <p><b>Reducing GH</b> • GH can be lowered by using an API WATER SOFTENER PILLOW in the filter. This will remove the calcium and magnesium ions through ion exchange. • Partial water changes using distilled, deionized or RO water can also reduce the GH.</p> <p><b>Increasing GH</b> African Cichlids require water with a high GH. API AFRICAN MINERAL SALTS can be used to increase the GH.</p> <p><b>What is General Hardness (GH)?</b> GH is the measure of Calcium (Ca<sup>2+</sup>) and Magnesium (Mg<sup>2+</sup>) ion concentrations dissolved in fresh water. These minerals are present in municipal, well and bottled spring water. The GH in tap water depends on the source of the water and the treatment process that it has undergone. Hard water [≥200 ppm (mg/L)] is high in calcium and magnesium. Soft water [50 - 100 ppm (mg/L)] is low in these minerals.</p> <p><b>Testing Tips</b></p> <ul style="list-style-type: none"> <li>This test reads from 0 - 180 parts per million (ppm) in freshwater. (ppm is equivalent to mg/L.) To convert ppm to German Degrees (°dGH), divide the reading by 17.9.</li> <li>It is important to monitor the GH in both the aquarium and in the tap water. Some tap water supplies have a low GH while others have a high GH.</li> <li>Even if the GH is correct initially, it can increase sharply over time. As water evaporates from the aquarium it leaves the hardness minerals behind. Topping off with tap water simply adds more minerals to the aquarium. This can result in stressful conditions for the fish.</li> <li><b>This test cannot be used in salt water</b> because the Calcium (Ca<sup>2+</sup>) &amp; Magnesium (Mg<sup>2+</sup>) ion concentrations in salt water are above the range of this test.</li> </ul>	ppm (mg/L)	°dGH	Type of fish	30	1.7°	Discus, arowanas, neons, elephant nose, cardinals, live plants	60	3.4°	Most tropical fish, including angelfish, tetras, botia, community aquariums, live plants	120	6.7°	Most tropical fish, including swordtails, guppies, mollies, cichlids, goldfish	180	10°	African Cichlids, goldfish			
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<p><b>NITRITE &amp; NITRATE TEST</b></p> <p><b>What the Test Results Mean</b></p> <p><b>Nitrite:</b></p> <ul style="list-style-type: none"> <li>In new aquariums the nitrite level can gradually climb to 5 ppm or more. As the biological filter becomes established (in 4 to 6 weeks) the nitrite levels will drop to 0 ppm (mg/L).</li> <li>In established aquariums the nitrite level should always be 0 ppm (mg/L). The presence of nitrite in established aquariums indicates possible over-feeding, too many fish or inadequate biological filtration.</li> </ul> <p><b>Nitrate:</b></p> <ul style="list-style-type: none"> <li>In new aquariums the nitrate level can gradually climb as the biological filter becomes established.</li> <li>A nitrate level of 40 ppm (mg/L) or less is recommended for freshwater aquariums. For saltwater aquariums, many marine aquarists prefer to keep the nitrate level as low as possible, especially when keeping invertebrates.</li> </ul> <p><b>Reducing Nitrite and Nitrate</b></p> <ul style="list-style-type: none"> <li>Use API QUICK START® to help speed up the development of the biological filter to reduce the level of nitrite, as well as ammonia.</li> <li>Use API AQUARIUM SALT to reduce the nitrite toxicity to the fish while the biological filter is removing the nitrite.</li> <li>API NITRA-ZORB® (AQUA-DETOX) will remove both nitrite and nitrate from freshwater aquariums. NITRA-ZORB (AQUA-DETOX) is a very effective blend of resins in a rechargeable pouch. It will not only remove nitrite and nitrate, but ammonia as well.</li> <li>In salt water, partial water changes help to reduce levels but may not reduce nitrite or nitrate levels much if tap water is used to make the salt water. This is because tap water may contain up to 40 ppm (mg/L) nitrate.</li> </ul> <p><b>Why Test Nitrite &amp; Nitrate?</b> Nitrite (NO<sub>2</sub><sup>-</sup>) and Nitrate (NO<sub>3</sub><sup>-</sup>) are produced in the aquarium by the biological filter. Beneficial bacteria convert toxic ammonia into nitrite (also toxic) and then convert the nitrite into nitrate. An established aquarium should have 0 ppm (mg/L) nitrite; but nitrate will continue to increase over time.</p> <p><b>Nitrite:</b> Testing for nitrite is essential, so that if it is present, steps can be taken to remove it. Nitrite in the aquarium water interferes with fish respiration, and high levels of nitrite quickly lead to fish death. Even a trace amount of nitrite causes fish stress, suppressing the immune system. This increases the likelihood of disease and subsequent death.</p> <p><b>Nitrate:</b> The biological filter constantly produces nitrate in an aquarium. A high nitrate level indicates a buildup of fish waste and organic compounds, causing poor water quality and contributing to the likelihood of fish disease. Excessive nitrate also provides a nitrogen source that can stimulate algal blooms (green water). Many aquarists believe that maintaining a low level of nitrate improves the health of fish and invertebrates.</p> <p><b>Testing Tips</b></p> <ul style="list-style-type: none"> <li>Nitrite and Nitrate should be tested once a week as a routine part of aquarium maintenance in order to make sure that they do not reach undesirable levels.</li> <li>This test kit reads total Nitrite (NO<sub>2</sub><sup>-</sup>) and total Nitrate (NO<sub>3</sub><sup>-</sup>) in parts per million (ppm), which are equivalent to milligrams per litre (mg/L).</li> <li>Nitrite reads from 0 - 10 ppm (mg/L); Nitrate reads from 0 - 200 ppm (mg/L).</li> </ul>	<p><b>CARBONATE HARDNESS (KH) TEST</b></p> <p><b>What the Test Results Mean</b></p> <p>In order to provide the proper environment for your fish, and to ensure a stable pH, it is important to monitor the KH in both the aquarium and the tap water. The table below is a guide to the desired KH for certain common tropical fish and live plants:</p> <table border="1"> <thead> <tr> <th>ppm (mg/L)</th> <th>°dKH</th> <th>Type of fish</th> </tr> </thead> <tbody> <tr> <td>40</td> <td>2.2°</td> <td>Discus, arowanas, elephant nose, neons, cardinals, live plants</td> </tr> <tr> <td>80</td> <td>4.5°</td> <td>Most tropical fish, including angelfish, tetras, botia, community aquariums, live plants</td> </tr> <tr> <td>120</td> <td>6.7°</td> <td>Most tropical fish, including swordtails, guppies, mollies, cichlids, goldfish</td> </tr> <tr> <td>180</td> <td>10°</td> <td>African Cichlids, goldfish, brackish water &amp; marine fish</td> </tr> <tr> <td>240</td> <td>13.4°</td> <td>Rift Lake Cichlids, goldfish, brackish water &amp; marine fish</td> </tr> </tbody> </table> <p><b>Reducing KH</b> KH can be lowered by making partial water changes using distilled, deionized or RO water.</p> <p><b>Increasing KH</b> KH can be increased by using API PROPER pH®:</p> <ul style="list-style-type: none"> <li>API PROPER pH 6.5, 7.0 and 7.5 are non-carbonate buffers that automatically adjust the pH and stabilize the KH in freshwater.</li> <li>API PROPER pH 8.2 is a carbonate buffer suitable for African cichlid, brackish water and marine aquariums.</li> </ul> <p><b>What is Carbonate Hardness (KH)?</b> Carbonate Hardness (KH), also known as Alkalinity, is the measure of Carbonate (CO<sub>3</sub><sup>2-</sup>) and Bicarbonate (HCO<sub>3</sub><sup>-</sup>) ion concentrations dissolved in freshwater or saltwater. Carbonate Hardness helps to stabilize the pH in aquarium water. An aquarium with a low KH level [50 - 100 ppm (mg/L)] will tend to be acidic. An aquarium with a very low KH level will be subject to rapid pH shifts if not monitored carefully. This causes stressful conditions for fish. An aquarium with a high KH level [≥200 ppm (mg/L)] will tend to have a high pH. Even if the KH is correct initially, it can decrease over time as the carbonates are used by the biological filter and plants.</p> <p><b>Testing Tips</b></p> <ul style="list-style-type: none"> <li>This test reads from 0 - 240 ppm (mg/L) in freshwater. This test measures KH in ppm (mg/L). To convert ppm to German Degrees (°dKH) divide the reading by 17.9.</li> <li>Carbonate and Bicarbonate ions are present in municipal, well and bottled spring water. 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