



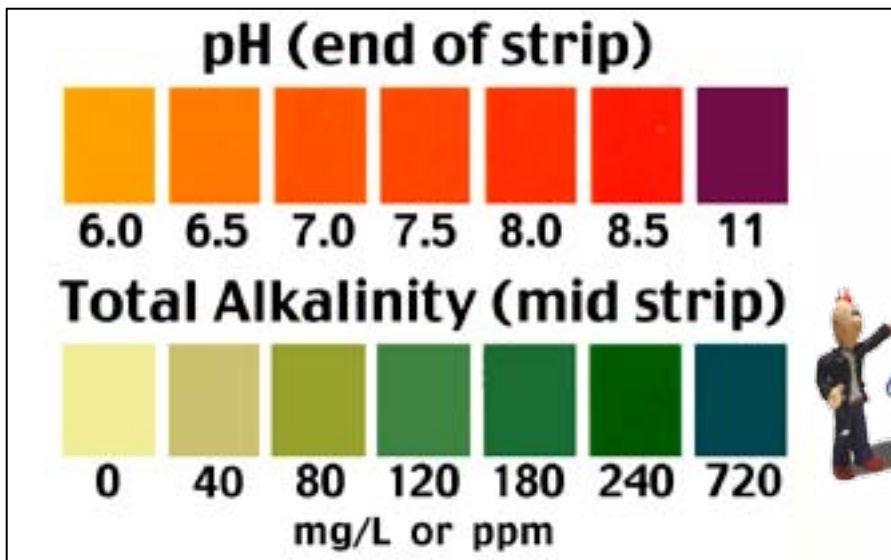
546 Hydroponics Water Quality Sciencefaircenter.com Study Kit

Each water sample is tested for this Set of parameters:
Alkalinity, pH, Water Hardness, Phosphate,
Nitrate, Nitrite, and Total Dissolved Solids (TDS)
(7 tests per Set)

Log onto
www.sciencefaircenter.com/documentation.tpl
for additional information on this study kit.

Find more water information at www.sciencefairwater.com (a web work in progress).

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#115 pH and TOTAL ALKALINITY of Water

Colorimetric test strips. (2 tests per strip)

pH and Total Alkalinity are two of the most fundamental parameters in drinking water testing as well as a great variety of other applications of water usage. Alkalinity indicates the buffering capacity of natural waters. A water is buffered if the pH does not change greatly by addition of acids or bases.

The most effective buffering action is within the pH range of water from 6.0 to about 8.5. The productivities of water can be correlated with pH, alkalinity and the buffering system.

The color charts for these tests read pH levels and Total Alkalinity in mg/L or ppm.

The Color Comparator Chart test reports levels of:
 pH levels of 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 11
 Total Alkalinity 0, 40, 80, 120, 180, 240, 720 mg/L or ppm.
 Both tests are on the same test strip.

Results are obtained from this test in 25 seconds.

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Total Hardness (As CaCO₃)



100 TOTAL WATER HARDNESS

Colorimetric test strips. (1 test per strip)

Water Hardness is composed of mostly calcium and magnesium. The water hardness comes from naturally occurring minerals in the local and regional geology being dissolved by water.

Hardness is a key water parameter and its control is important to assure proper water quality. Low Hardness (Soft water) can contribute to corrosive water. High Hardness (Hard water above 400) can lead to clarity and scaling problems. Water softeners are used to reduce Total Hardness of water.

Testing for hardness in tap water is very common and is very quick and easy with these test strips. The Color Comparator Chart for this test allows you to read Total Hardness in mg/L or ppm.

This test reports calcium hardness concentrations in water at 0, 40, 80, 120, 180, 250, 425, 1000 mg/L or ppm.

Results are obtained from this test in about 5 seconds.

Find more water information at www.sciencefairwater.com (a web work in progress).

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Background Information

Total Hardness (TH) is a measure of the total amount of calcium and magnesium that has naturally leached into the water during its journey through the watershed. In the U.S. water hardness is most often reported as milligrams per liter (mg/L) or parts per million (ppm) as calcium carbonate (CaCO₃).

It is difficult to produce soap suds in water with high levels of calcium and magnesium ions, hence the term “hardness”.

In addition to reducing the effectiveness of soaps and detergents, hard water may cause an insoluble scale to form on fixtures and on the inside of pipes. Scale formation depends on several factors, one of which is pH.

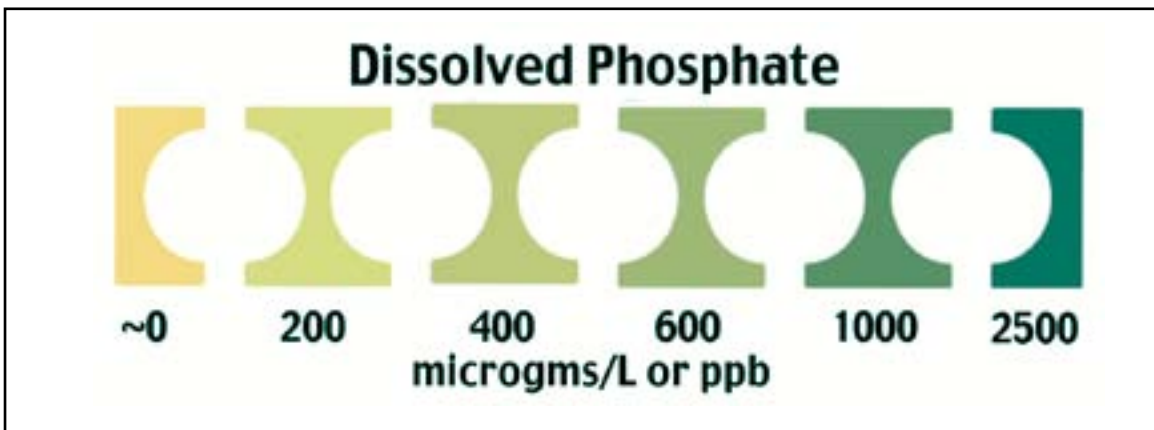
The EPA does not regulate the levels of hardness in the water supply. There are, however, generally recognized levels that describe the amount of hardness in a water sample:

Hardness as Calcium carbonate (ppm)	Classification
0-60	Soft
61-120	Moderately Hard
121-180	Hard
>180	Very Hard



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#140 Dissolved Phosphate in Water

Colorimetric test strips. (1 test per strip)

Testing for Dissolved Phosphate in water is common, but usually found in low concentrations. Because of low concentrations, phosphate is involved with regulating biological growth and productivity in natural waters.

The color chart for this test allows you to read Dissolved Phosphate in micrograms/L or ppb.

The Color Comparator Chart for this test allows you to read Phosphate levels in water at:

~0, 200, 400, 600, 1000, 2500 micrograms/L or ppb.

(Note: concentration units are micrograms per Liter or parts per billion).

Results are obtained from this test in about 1 minute.



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Nitrate plus Nitrite (end pad)

(measured as Nitrogen)



Nitrite

(measured as Nitrogen)



#135 Nitrate and Nitrite in Water

Colorimetric test strips. (2 tests per strip)

Nitrate /Nitrite test strips are for testing water in many applications from drinking water to water used to wash produce.

Nitrates and nitrites occur normally in nature from the breakdown of ammonia in the nitrogen life cycle. Nitrates in nature cause plant and algae growth that may affect the balance of water-based ecosystems.

Nitrate is found in fertilizers and animal waste. Rain tends to wash fertilizers containing nitrates into nearby natural water systems and ground water. Groundwater used as drinking water that contains nitrogen represents a hazard to babies. Many die every year as a result from "Blue Baby Syndrome."

The Color Comparator Chart for this test reports concentrations compatible with EPA limits of total nitrogen and nitrite nitrogen in water.

The test reports levels of:

NO₃ (as N): 0, 0.5, 2.0, 5, 10, 20, 50 mg/L or ppm;

NO₂ (as N): 0.15, 0.3, 1, 1.5, 3, 10 mg/L or ppm.

Results are obtained from this test in 1 minute.

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Total Dissolved Solids (TDS)



#145 Total Dissolved Solids in Water

Colorimetric test strips. (1 test per strip)

Testing for Total Dissolved Solids (TDS) in tap water is very common and is very quick and easy with these test strips. The EPA Secondary Drinking Water Standard for TDS is 500mg/L or ppm.

The color chart for this test allows you to read TDS in milligram/L or ppm.

The Color Comparator Chart for this test reports Total Dissolved Solids levels in water at:

0, 50, 100, 250, 500, 750 mg/L or ppm.

(Note: concentration units are milligrams per Liter or parts per million).

Results are obtained from this test in about 30 seconds.



Find more water information at www.sciencefairwater.com (a web work in progress).

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