

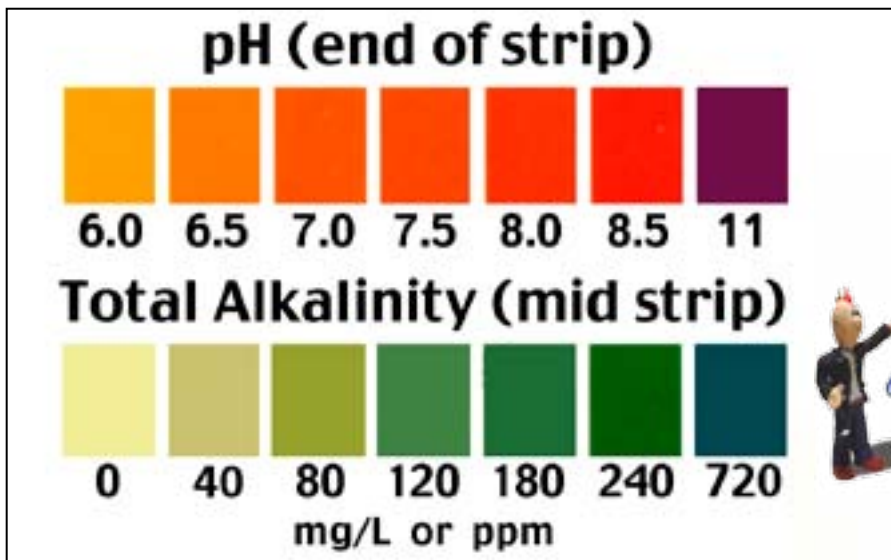


## # 524 Compare Drinking and Bottle Water Sciencefaircenter.com Study Kit

Each water sample is tested for this Set of parameters:  
Alkalinity, pH, Water Hardness,  
Free Chlorine and Total Chlorine  
(5 tests per Set)

Log onto  
[www.sciencefaircenter.com/documentation.tpl](http://www.sciencefaircenter.com/documentation.tpl)  
for additional information on this study kit.  
Find more water information at [www.sciencefairwater.com](http://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 CaCO<sub>3</sub>)



### # 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.

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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 (CaCO<sub>3</sub>).

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.

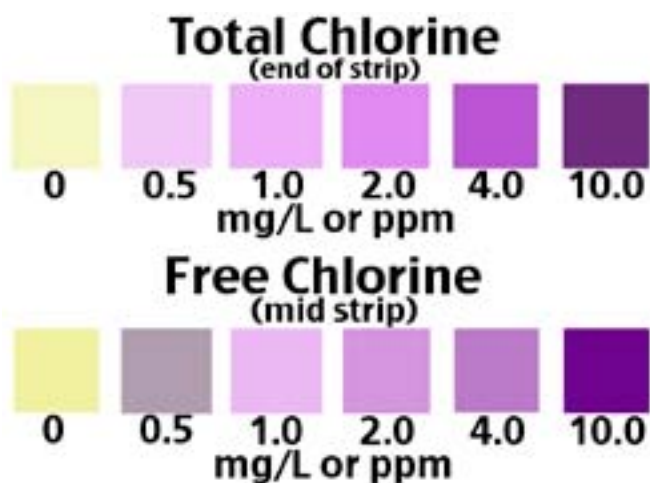
The EPA does not regulate the levels of hardness in the water supply. There are, however, generally recognized levels that describe the amount of hardness in a water sample:

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



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## #130 Total and Free Chlorine in Water

Colorimetric test strips. (2 tests per strip)

Total Chlorine and Free Chlorine test strips are used for testing drinking water from a city water treatment system. This dual test is a convenient way of monitoring Total and Free Chlorine.

This test has been calibrated around EPA drinking water standards. Free Chlorine levels of 4.0 mg/L or greater exceeds Maximum Contaminant Level (MCL) as recommended by EPA.

The Color Comparator Chart for this test reports mg/L or ppm of:  
Total Chlorine 0.0, 0.5, 1.0, 2.0, 4.0, 10.0  
Free Chlorine 0.0, 0.5, 1.0, 2.0, 4.0, 10.0

Results are obtained from this test in 30 seconds.



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