556 Minerals and Nutrients Water Panel

Sciencefaircenter.com Study Kit

Each water sample is tested for this Set of parameters:

Phosphate, Nitrate, Nitrite,Dissolved Metals (Combined Metals Cu+2, Co+2, Zn+2, Cd+2, Ni+2, etc.), Iron +2, Total Dissolved Solids (TDS), Alkalinity and pH (8 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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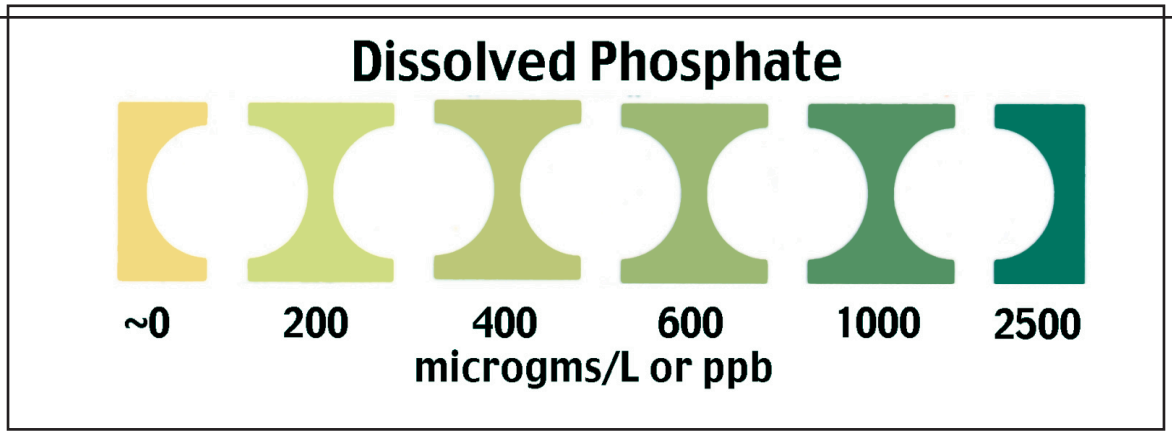

#140 Dissolved Phosphate in Water

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 bilogical 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 microgms/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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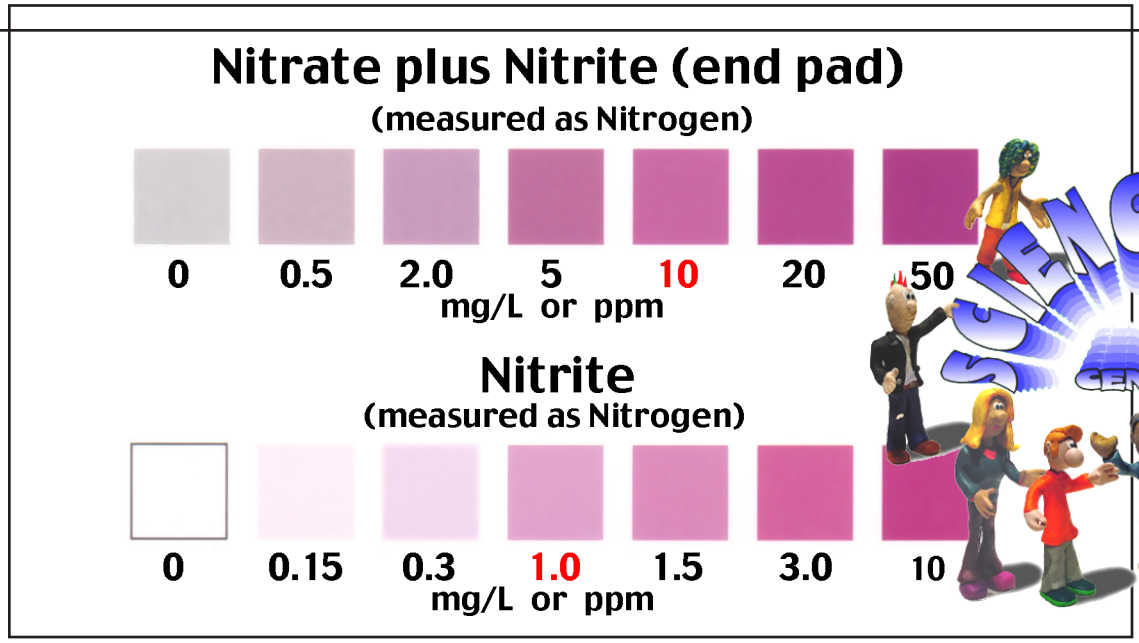

#135 Nitrate and Nitrite in Water

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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Conversion Ratio

Nitrate and Nitrite Nitrogen (as N) test results are usually expressed as mg/L or ppm. Sometimes the concentration of Nitrates or Nitrites needs to be expressed as Nitrate (N03) or Nitrite (N02).

To convert nitrate nitrogen concentration to nitrate concentration. multiply the test strip result by 4.4.
EXAMPLE: 5 PPM nitrate nitrogen x 4.4 = 22 mg/L or ppm nitrate.

To convert nitrite nitrogen concentration to nitrite concentration, multiply the test strip result by 3.3.
EXAMPLE: 1.5 PPM nitrite nitrogen x 3.3 = 4.95 mg/L or ppm nitrite.

Background Information

NOTE: Both pads react with Nitrite. The end pad, which has zinc added, converts the Nitrate to Nitrite and, therefore, reacts with both Nitrate and Nitrite. To determine the true Nitrate Nitrogen level you must subtract the Nitrite level from the Nitrate plus Nitrite (end pad) level.

National Primary Drinking Water Regulations set forth by USEPA recommend a Nitrate (measured as Nitrogen) level less than 10 mg/L or ppm and a Nitrite (measured as Nitrogen) level less than 1 mg/L or ppm.

The World Health Organization guideline value is 50 mg/L (acute) for Nitrate (as N03) and 3 mg/L (acute) for Nitrite (as NO2).

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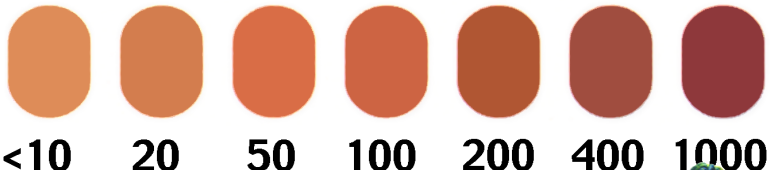
Dissolved Metals



#150 Dissolved Metals in Water

Colorimetric test strips. (1 test per strip)

Testing for Dissolved Metals, also referred to as Trace Metals, in tap water is very common and is very quick and easy with these semiquantitative test strips. Each test strip result indicates the combined presence of heavy metals (Cu+2, Co+2, Zn+2, Cd+2, Ni+2, Pb+2, etc…) in water.

The color chart for this test allows you to read Dissolved Metals in micrograms/L (ugms/L) or parts per billion (ppb). The color chart was calibrated using mixed metals solution.

In the presence of one specific metal, or a high concentration of a specific metal, colors such as purple, red, or brown may appear. In this situation, matching levels based on color intensity may be necessary to reach semiquantative results.

The Color Comparator Chart for this test reports mixed Dissolved Metals levels in water at:
<10, 20, 50, 100, 200, 400, 1000 microgms/L or ppb.
(Note: concentration units are micrograms per Liter or parts per billion: ppb.)

Results are obtained from this test in 2 1/2 minutes.

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#155 Iron (Fe^{+2}) in Water

Colorimetric test strips. (1 test per strip)

Testing for Iron in tap water is very common and is very quick. Each test strip result indicates the presence of Iron in the ferrous (Fe+2) state in water.

The color chart for this test allows you to read Iron+2 in milligram/L or ppm.

The presence of Iron in water contributes to the reddish brown stains on porcelin and plumbing fixtures. It can also add a metalic taste and odor to drinking water.

The Color Comparator Chart for this test reports mixed Iron (Fe+2) levels in water at:
0.0, 0.1, 0.3, 1.0, 5.0 milligms/L or ppm.
(Note: concentration units are milligrams per Liter or parts per million).
Best results are obtained when water is room temperature.

Results are obtained from this test in 2 1/2 minutes.

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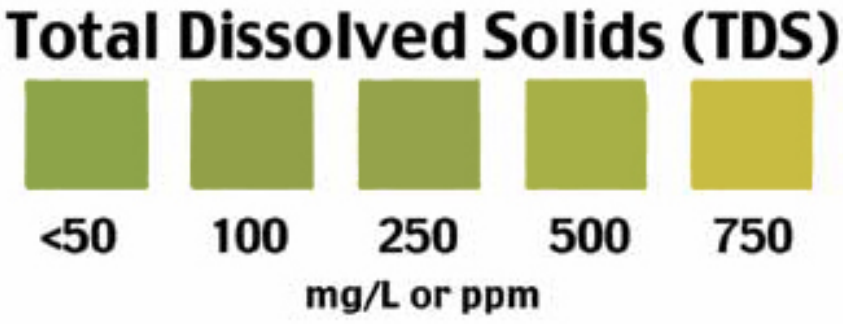

#145 Total Dissolved Solids in Water

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 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.

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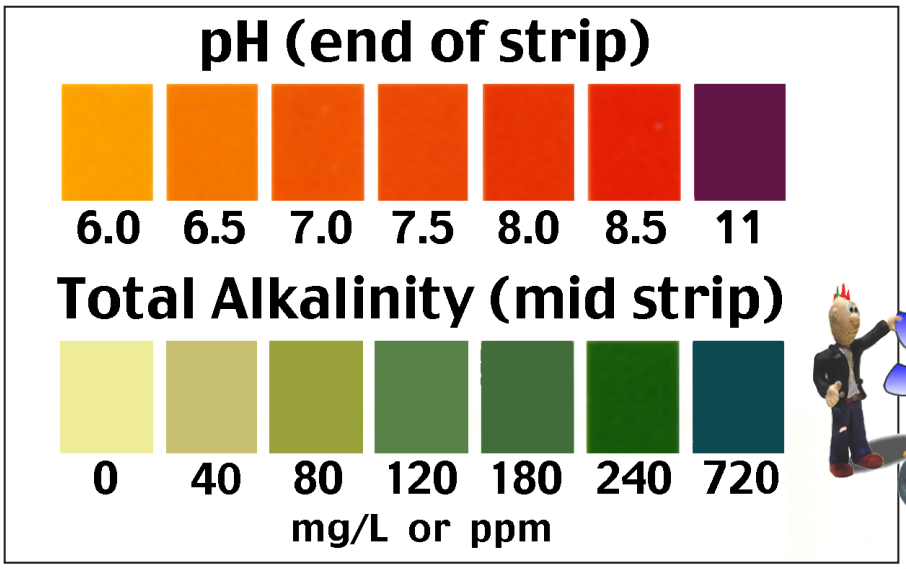

#115 pH and TOTAL ALKALINITY of Water

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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