

"Healthy Water, Healthy People" Experiment: Parameter - Alkalinity



pH Sensor (PS-2102)



Overview:

Alkalinity is the property that helps prevent drastic changes in pH, and thus protects humans, wildlife, and aquatic life.

Equipment:

For each lab group:

- pH Sensor:
[PASPORT \(PS-2102\)](#)
- Computer Interface:
[PASPORT Xplorer \(PS-2000\)](#) | [PASPORT Xplorer GLX \(PS-2102\)](#)
- Tap water or distilled water if available
- Granite or another igneous rock
- Limestone, concrete or an antacid tablet
- 500-mL beakers (or similar containers)

Software Setup:

1. Click on one of the links below to download a pre-configured DataStudio file for this Alkalinity experiment, and then open the file.

File Format: [Windows \(.zip file\)](#) or [Macintosh \(.sit file\)](#)

When the file is opened, you should see a graph display and a table display of pH vs. Solution #, as well as a digits displays of pH.

2. Connect the pH sensor to an Xplorer or Xplorer GLX.

Experimental Procedure:

Data Recording:

1. At least one day before prior to the experiment, prepare three beakers: one with tap water; one with a piece of granite or another igneous rock in tap water; and one with limestone, concrete or an antacid tablet in tap water.
2. Place the pH Sensor into the first beaker.
3. Measure and record the pH level
4. If indoors and connected to a computer or laptop, click the Start button () in DataStudio. Watch the digits display for the temperature reading to stabilize, and note the result. Click the Stop button () in DataStudio to end data collection.
5. Repeat steps 2-4 for each beaker.
6. Place the pH Sensor back into the first beaker.
7. Click the Start button () in DataStudio to begin recording.
8. Add acid, such as vinegar, to each to beaker until the pH level reaches 4.2. At this pH level, all of the alkalinity is consumed.
9. Observe and note the amount of acid used.
10. Repeat steps 6-9 for the other beakers.
11. If you have collected data remotely using Xplorer or GLX, your data can be downloaded to the computer automatically. Connect the Xplorer or GLX to the USB port on your computer using the cable provided, and follow the on-screen prompts to view your data in DataStudio.
12. How does the amount of acid added differ among mixtures? Discuss possible reasons.