

Precipitation pH Using pH Meter and “Table” Salt

Lab Guide

Task

Measure the pH of your precipitation using a pH meter and “table” salt.

What You Need

- Atmosphere Investigation Data Sheet
- 3 clean 100 mL beakers or cups
- Finely ground “table” salt (crystals less than 0.5 mm in diameter)
- Covered sample jar containing at least 30 mL of rain or melted snow
- Salt card consisting of 4 mm and 5 mm circles drawn on a card or piece of paper
- Latex gloves
- Stirring rod or spoon
- Pen or pencil
- pH meter
- Distilled water in wash bottle
- pH buffers 4, 7, and 10

In the Field

1. Put on latex gloves.
2. Calibrate your pH meter according to the instrument instructions, using the pH buffers. Be sure to use enough standard to completely cover the tip of the electrode.
3. Rinse electrode *thoroughly* with distilled water. Any remaining standard can contaminate your sample.
4. Pour a 50 mL (or less if you do not have 50 mL) sample of rain or melted snow from your sample jar into a clean beaker. You must have at least 30 mL of sample to measure pH.
5. Sprinkle salt onto the appropriate circle on your *salt card*. If your rain or melted snow sample is 40-50 mL, use the large 5 mm circle of the *salt card*. If your rain or melted snow sample is 30-40 mL, use the small 4 mm circle.
6. Fill the appropriate circle with a **single** layer of salt. Remove any excess salt from the *salt card*.
7. Pour the salt covering the circle on your *salt card* into the beaker.
8. Stir the beaker's contents thoroughly with stirring rod or spoon until salt is dissolved.
9. Follow the instructions that came with the pH meter to measure the pH of the sample and record the measurement on your *Data Sheet*. (**Note:** the electrode must be completely covered with sample water)
10. If you have at least 30 mL of rain or snow left in your sample jar then repeat steps 4-9. Otherwise, repeat step 9. Continue until you have collected a total of 3 pH measurements.
11. Calculate the average of the 3 pH measurements and record on your *Data Sheet*.
12. Check to make sure that each measurement is within 0.2 pH units of the average. If they are not within 0.2 units of the average, repeat the measurements. If your measurements are still not within 0.2 pH units of the average, discuss possible problems with your teacher.
13. Rinse the beakers and sample jar three times with distilled water.