

Lab Report Template

Jake Hidlebaugh Block 3 10/16/17

Problem

Which soil type has the highest buffering capacity?

Hypothesis

Clay will have the highest buffering capacity because it has the smallest mineral size.

Materials

- Distilled water
- Rinse bottle
- HCL dropper
- NaOH dropper
- Stir rod
- 3 soil samples
- 4 9-oz plastic cups
- LabQuest2
- Vernier pH sensor
- Buffer solution
- 2 250ml beaker
- 2 50ml beaker
- Permanent marker
- Laboratory tape
- 3 plastic spoons

Procedures

1. Get 3 cups and use the lab tape to label one 'sand', label one 'loam', and the other 'clay'.
2. Put 4 spoonful's of each type of soil in its specified cup.
3. Fill a 100ml beaker with distilled water
4. Add 100ml of distilled water to each cup and stir for 2 minutes and let each settle for 2 minutes after stirring
5. Rinse off stir rod and put pH sensor in buffer beaker and rinse with the rinse bottle then put the sensor in the buffer solution
6. Add 5 drops of a base to each one of the cups and stir for 1 minute, then let it sit for 1 minute
7. Take the pH of each sample using the LabQuest and record on table in notebook.
8. Repeat until you have put in a total of 15 drops in each cup.

Data Collection

Name of Soil	0 Drops of Base	5 Drops of Base	10 Drops of Base	15 Drops of Base	Δ pH
Sand	6.58	6.56	6.62	7.15	Δ .57
Loam	6.58	6.65	6.75	6.62	Δ .04
Clay	6.60	6.89	6.80	7.00	Δ .40

Analysis of Results

Sand has the lowest pH buffering capacity and Loam has the highest pH buffering capacity.

Conclusions

I can infer that loam has the highest buffering capacity compared to clay and sand. My prediction was disproven because I thought clay would have the highest pH buffering capacity but it turned out that loam did. I believe that the pH sensor was wrong because halfway through my experiment it went hay-wire. Some questions people may have is