

Lab - Acid/Base Titration

Purpose: To determine the concentration of an unknown concentration acid solution by titration with a standard concentration base solution.

Procedure:

- 1) Put on your goggles and a lab apron.
- 2) Clean and rinse one buret, a graduated cylinder and a 125 mL Erlenmeyer flask. Rinse the final time with distilled water. Obtain a beaker of unknown acid and a beaker of known concentration base. Record the concentration of the base in the data table.
- 3) Rinse the buret with a few mL of the known base and discard the rinse.
- 4) Fill the buret above the 0.0 line with base. Drain excess base to the 0.0 line, making sure no bubbles remain in the buret tip.
- 5) Measure 15 mL of acid using the graduated cylinder to the Erlenmeyer flask. Record the exact volume in the table below.
- 6) Add 2 - 3 drops of phenolphthalein indicator to the flask and mix.
- 7) Slowly add base from the buret to the flask, swirling as you add it. When the color change begins to occur, slow the addition to drop-by-drop to the **end point** (when one drop changes the color from clear to light pink and lasts for 30 seconds). Record the exact volume of base used in the table below.
- 8) Repeat for a second trial.
- 9) Repeat steps 5 - 8 for a different unknown acid.

Data: **Molarity of standardized NaOH =**

1st Acid Solution Used =

2nd Acid Solution Used =

	Volume of Acid	Volume of Base
Experiment 1 (Acid ____)		
Experiment 2 (Acid ____)		
Experiment 3 (Acid ____)		
Experiment 4 (Acid ____)		

Calculations & Questions

- 1) Calculate the molarity of the acid solution for all four trials and then the average calculated molarity for each of the two unknowns.
- 2) Use the accepted value of the acid (given by your instructor) to calculate your percent error.
- 3) Explain how you could find the unknown concentration of a base.
- 4) The acid in this experiment was hydrobromic acid. Write the balanced neutralization for the reaction.
- 5) When neutralization occurs, as in this lab, many believe that the resulting solution is perfectly safe. What reasons can be given to show that the products should be treated with caution?

Conclusion: