

UNIT 14 - Acids & Bases

ACID – BASE TITRATION LAB

PURPOSE: - to determine the molarity of an aqueous solution of hydrochloric acid (HCl)
- to learn and practice the technique for titration

MATERIALS:

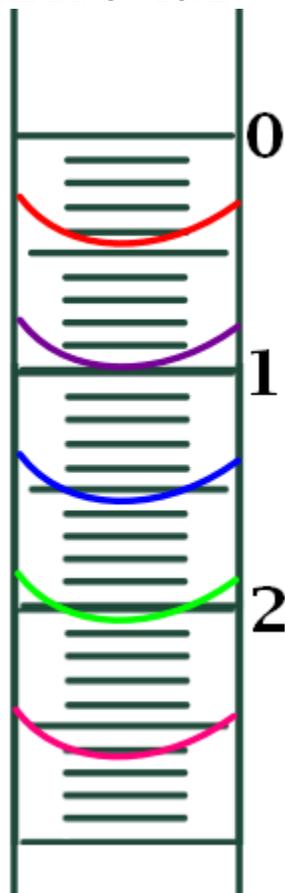
EQUIPMENT

- 2 burets (labeled "A" and "B")
- double buret clamp
- ring stand
- Erlenmeyer flask

CHEMICALS

- _____ M NaOH
- phenolphthalein
- ? M HCl

READING A BURET:



PROCEDURE:

- 1.) Obtain approximately 10 mL of HCl from the buret labeled "A" for acid in the Erlenmeyer flask. (It is not necessary to have EXACTLY 10.00 mL. However, the volume of the HCl should be measured to the nearest hundredth.)
- 2.) Add 3 or 4 drops of phenolphthalein. (Only a few drops are needed. Adding more than 3 or 4 drops will not make the reaction any bigger or better.)
- 3.) Add NaOH from the buret labeled "B" for base SLOWLY until the solution changes color. (When the solution changes color, the acid is neutralized. Ideally, the solution in the flask should be a very faint shade of the color.)

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DATA TABLE:

		TRIAL 1	TRIAL 2	TRIAL 3
1	Reading of HCl (at start)	mL	mL	mL
2	Reading of HCl (at end)	mL	mL	mL
3	Volume of HCl used	mL	mL	mL
4	Reading of NaOH (at start)	mL	mL	mL
5	Reading of NaOH (at end)	mL	mL	mL
6	Volume of NaOH used	mL	mL	mL

QUESTIONS AND CALCULATIONS:

- 1.) Write a balanced equation for the neutralization reaction that occurs between hydrochloric acid (HCl) and sodium hydroxide (NaOH).
- 2.) What is the mole ratio between HCl and NaOH in the balanced equation?
- 3.) What volume of HCl was used in TRIAL 1? Show how you determined this volume.
- 4.) What volume of NaOH was used in TRIAL 1? Show how you determined this volume.
- 5.) The NaOH had a concentration of _____ M. Using your data, what is the concentration (molarity) of the hydrochloric acid? (CLEARLY and LEGIBLY show your calculations in detail!)
- 6.) If your group was able to do more than one trial, what was the average molarity?