

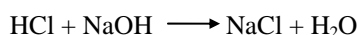
EXERCISE 15

TITRATION

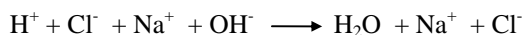
OBJECTIVES:

1. To prepare and standardize a solution.
2. To titrate an unknown sample using a standard solution.

When an acid is added to a base, neutralization occurs in which the acid reacts with the base to form salt and water in accordance with the following equation.



or



For complete neutralization, the number of milliequivalents of the acid must be exactly equal to the number of milliequivalents of base added. This is the end point or equivalence point which may be determined by the change in color of an indicator.

Equipment

1. buret
2. 20 ml pipet
3. Erlenmeyer flask

Procedure

1. Each student is required to prepare 400 ml of approximately .1 N NaOH. Weigh approximately 1.6 g of NaOH (weigh fast and do NOT touch), and dissolve completely in 400 ml of distilled water. Pipet 20 ml of standard H_2SO_4 into 250 ml Erlenmeyer flask and add 2 drops of phenolphthalein.
2. Using the base you prepared, fill a clean 50 ml buret; make sure the tip of the buret is also full.
 - a) Record the initial reading of the buret.

Now run the base into the acid while swirling the flask. Note that the color of solution turns pink, then fades. Now add base, one drop at a time until one drop produces a pink color that does not fade.

- b) Record the final reading of the buret.

3. Calculate the volume of the base used.
4. Calculate the normality of your base.
5. Obtain an unknown acid from your instructor and repeat the above procedure.
6. Calculate the normality of the unknown acid.

Perform all determinations in duplicate.

ANSWER SHEET - 1

EXERCISE 15

NAME _____ SECTION _____ DATE _____

SAMPLE NUMBER _____

FIRST	SECOND <u>DETERMINATION</u>	<u>DETERMINATION</u>
1a. Volume of acid	_____	_____
b. Normality of standard acid.....	_____	_____
2a. Initial buret reading	_____	_____
b. Final buret reading	_____	_____
3. Volume of base used	_____	_____
4a. Normality of your base.....	_____	_____
b. Average normality of base	_____	_____

ANSWER SHEET - 2

EXERCISE 15

	<u>FIRST DETERMINATION</u>	<u>SECOND DETERMINATION</u>
5a. Volume of unknown acid	_____	_____
b. Final buret reading	_____	_____
c. Initial buret reading	_____	_____
d. Volume of base	_____	_____
6a. Normality of unknown acid	_____	_____
b. Average normality of unknown acids	_____	_____
7. % error	_____	_____