

Chem 1210

PREPARATION AND ANALYSIS OF AN AMMINE NICKEL (II) CHLORIDE COMPOUND

NAME: _____ DATE: _____ STN #: _____

OBJECTIVE: To prepare and analyze an amminenickel(II)chloride compound.

OBSERVATIONS:

Part A:

Part B:

Part C:

Part E:

DATA:

Part A: Mass of $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ used =

Mass of empty bag =

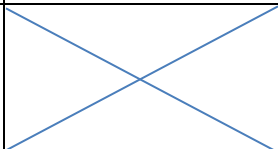
Mass of bag + product =

Mass of purple product =

Part B: Mass of $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ used =

Part C: Mass of ammine nickel compound used =

Part D:

Standard Solutions (mL)	Conc of standard solutions	%T / Abs	%T / Abs	Average Absorbance
5.00				
10.00				
20.00				
25.00				
Nickel ammine Solution (from part C)				

Show a sample calculation for the concentration of 5.00 mL standard solution

Part E:

Run #	Mass of sample + boat (g)	Mass of boat (g)	Mass of sample (g)	Vol_{ini} (mL)	Vol_{final} (mL)	Volume of NaOH used (mL)
1.						
2.						
3.						
4.						

CALCULATIONS:

Part A: Theoretical Yield

Experimental Yield =

Part D: Slope of Beer's Law plot =

Y intercept =

1. Calculate % Nickel by mass in Nickelamine complex

2. Calculate the molar mass of Nickelamine complex

3. Calculate mmols of Ni^{2+} / gram of Nickelamine complex

Part E:

1. Calculate the % ammonia (by mass) in Nickelamine complex

Run #	% ammonia	Average % NH_3 (of only precise runs)

2. Calculate the mmoles of NH_3 / gram of Nickelamine complex.

CALCULATION OF MOLECULAR FORMULA:

Now that you have calculated the mmols in Part D & E per gram of Nickelamine complex, so

1. Calculate the ratio of mmol of NH_3 to mmol of Ni^{2+}
2. Closest whole number ratio =
3. Use the whole number mole ratio and Experimental molar mass (part D) to determine the likely molecular formula for the Nickelamine complex.

QUESTION:

Explain, if a student unknowingly overtitrated the methyl red endpoint in the ammonia determination, how would that affect his/her $\text{NH}_3/\text{Ni}^{2+}$ ratio?