

Report Form: Properties of Aluminum and Its Compounds

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Name _____ TA _____

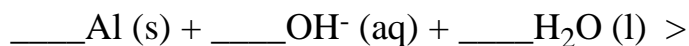
Date _____ Lab Section _____

Note: In preparing this report you are free to use references and consult with others. However, you may not copy from other students' work (except to compile the group data set) or misrepresent your own data.

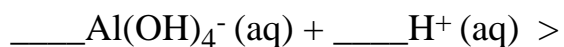
I. Preparation of an Alum

Write balanced reactions for:

1. Aluminum reacts with potassium hydroxide to form soluble tetrahydroxoaluminate ion and hydrogen gas.

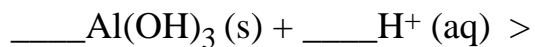


2. Addition of sulfuric acid forms the precipitate of aluminum hydroxide.

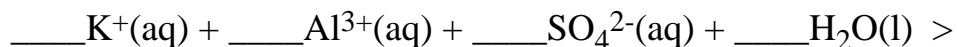


3. Additional acid neutralizes the hydroxide to form the clear solution of aluminum (III) ion and

water.



4. The alum precipitates on cooling.



II. Yield and Description of Crystals

1. Calculate the percent yield of the reaction forming alum from aluminum metal. Click here to see a worked example.

1. Your percent yield: _____
2. Describe the appearance of your crystals.

III. Qualitative Analysis of Alum

1. Is the solution acidic, basic, or neutral? _____

2. What happened when you added BaCl_2 ?

3. Write the equation for the reaction of 1 drop of 0.5 M BaCl_2 to the $\text{KAl}(\text{SO}_4)_2$ solution.

1. _____ $\text{KAl}(\text{SO}_4)_2$ (aq) + _____ BaCl_2 (aq) >

4. Note the color of the crystals in the flame: _____

IV. Acid-Base Properties of Aluminum Compounds

Record your observations and write a balanced chemical equation for the addition of:

1. sodium hydroxide to the aluminum nitrate solution.

2. more sodium hydroxide to the solution from the previous step.

3. nitric acid to the solution from the first step.

4. aqueous ammonia to aluminum hydroxide.

1.

Based on your observations in this lab, is aluminum hydroxide acidic, basic, or amphoteric? What other metal hydroxides display the same behavior? (**Refer to your textbook.**)

