

Chemistry 140

In the last lab, you were able to communicate effectively with another person how to do a titration. In this lab, you will use your new skills to write yourself a procedure to solve a QC (quality control) problem.

Please have as much of Parts 1 through 4 ready **before** class on Monday, November 6. Note that you may not be able to complete Part 2 until you know what technique you are going to use. For this particular writeup, no abstract is needed. carbon-copy pages of the write-up is due in class on **Monday, November 13.**

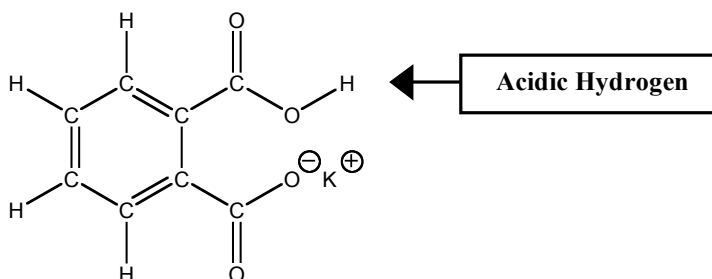
Your name, your partner's name, date of experiment

Lab 6: The purity of a commercially produced acid

Part 1. Purpose

Summarize the following scenario into a single sentence purpose:

"We are testing a recently developed new techniques for manufacturing the solid acid KHP (potassium hydrogen phthalate). Unfortunately, Frank the lab tech suspects that the purity of the final product is not high enough to do experiments with. Your job is to determine the purity of the suspect KHP by designing and implementing an experiment. Be sure to gather enough data to present a compelling argument to Frank!"



Molecular Structure of potassium hydrogen phthalate, or KHP ($\text{KHC}_8\text{H}_4\text{O}_4$, 204.22 g/mol)

Please write the balanced equation of the reaction you will use to determine the KHP's purity.

Please write the mathematical equations you will use. You will probably use this equation as well: $\text{purity of KHP} = ((\text{mass of KHP}) / (\text{mass of KHP sample})) * 100$.

Part 2. Materials and methods

Chemicals needed: KHP sample; the rest depends on what procedure you will use

Glassware needed: depends on what procedure you will use

Part 3. Procedure

Write a procedure for determining the purity of a sample of KHP. It will come to you as a dry powder.

The procedure should have the same level of detail as the procedure you wrote for the other person in Lab 5.

One hint: a good place to start is to assume that the KHP is, in fact, 100% pure. Perform an experiment and obtain some results. Now assume that the KHP is only 50% pure. Perform the same experiment; how would the results be *quantitatively* different?

How many times should you repeat the experiment to be confident of your results?

Part 4. Original data

Might this look similar to what you did in the past two labs? That depends on the procedure, but KHP sure does look like a monoprotic acid.

Part 5. Calculated results

Provide a step-by-step calculation of the purity of the KHP sample.

Part 6. Group results

No group results section this time.

Part 7. Questions

No questions.

Part 8. Conclusion (about two paragraphs)

Summarize the technique you used to determine the purity of the KHP sample.

What did you determine about the purity of the KHP sample? How confident are you of your results? Typically, 95% purity of reagents is needed in general chemistry experiments; will we be able to use this KHP in our experiments?

