GUIDELINES FOR USE OF THE LAB REPORT FORM

Use of Printed Report Forms

The Lab Report Form, when filled out, will serve as the report for experiments involving synthesis of compounds. No other report is needed. It is to be turned in along with any assigned questions. Products should also be turned in for inspection.

Items 1-10 will serve as your pre-lab notebook, and as usual, they MUST be completed BEFORE coming to the lab. Again, this will account for 10% of your report grade. Make a copy and submit it to your lab instructor before the lab starts. Your instructor will check the form at the beginning of the period and initial it. Any errors and incomplete parts need to be corrected and finished before you could start the experiment.

The report form is designed to foster an understanding of what is occurring at every stage in an experimental procedure, what each operation is designed to accomplish, and what each chemical does. The guidelines below should give you a cleaner idea of what is appropriate in each section.

Again, the Lab Report Form should be used for all experiments involving the synthesis of compounds. Refer to the Schedule if you are not certain whether you need a Report Form for a particular lab. The Lab Report Form can be down-loaded from http://www.chem.pdx.edu/~yanm.

Guideline for Lab Report Form

Name _____ Instructor's initials_____

1. Name of Experiment:

2. Purpose of Experiment:

   Generally the purpose is to prepare a specific compound and/or to illustrate a particular reaction type or technique.

3. Balanced Equation(s) for Main Reaction(s) (Show Catalysts):

   The equations given in the lab text and in "handout" procedures will often not be balanced. You must balance the equation. Sometimes more than one equation is needed. A balanced equation is needed to determine the limiting reagent(s) and theoretical yield.

4. Summary of Experimental Procedure:

   a. Reaction Stage:

   Most organic preparations can be subdivided into the three stages indicated here. "Reaction" describes the chemicals, operations, and conditions (time and temperature) necessary to convert starting materials to products. Omit quantities; we are trying to get you to think in generalities about what is being done.

b. Work-up (isolation of crude product):

At the end of the reaction stage, the product is present but mixed with solvent, by-products, unreacted starting materials, etc. "Work-up" is the term used to denote the process of separating the product from the other materials and isolating the product in a still-impure form (called the crude product) suitable for the final purification stage.

c. Final Purification:

The final purification of solids is generally carried out by recrystallization. Liquids are generally purified by distillation. Sometimes a product of sufficient purity is obtained directly from work-up and no final purification is carried out.

5. Sketch of Apparatus:

Not necessary for simple operations or simple equipment, such as separatory funnels, Erlenmeyer flasks, etc.

6. Reasonable Stopping Places and Estimated Time Needed to Reach Stopping Places:

To help you plan your work, indicate at which point(s) it would be safe to interrupt the preparation and resume at a later date. The product should not be left in contact with strong acids or bases for a long time. Generally, it is safe to stop after work-up, while over a drying agent, and sometimes at other points. Estimate the time you will need to reach the safe stopping points.

7. List All Chemicals Used (include reaction solvents, drying agents, extraction solvents, etc., and their purpose or function):

Can usually be subdivided as shown on the report form. The reagents which are chemically transformed as shown in the balanced equation(s) are called "reactants". The catalyst is involved in the reaction mechanism, but it is not chemically transformed and is still present at the end of the reaction stage.

8. Data: (List only for the reactants given in the balanced equation(s) of Item 3; omit catalysts)

Reactants	Mol. Wt.	Density (for liq)	Grams Used	Moles Used
This section is for organizing information to determine limiting reagent(s) and to calculate the theoretical yield. Pay attention to significant figures. They sometimes can make a difference in the theoretical yield calculations. Density is found in the handbook and is needed only for liquids, which are often measured by volume. Densities of common inorganic acids are listed in Appendix A of the laboratory manual.				

Product	Mol. Weight

9. Limiting Reactant:

The reactant which, based on the balanced equation(s) and the above data, governs the maximum amount of product which theoretically could be formed.

10. Theoretical Yield: _____ moles _____ grams

All of the above items must be completed and the completed preliminary laboratory report must be submitted to the laboratory instructor for initialing before starting the experiment. The following items are to be completed after the experiment is finished and then the complete report is given to the instructor.

11. Actual Yield (in grams):

Turn in product(s) which were obtained. Sample container should be labeled. On the label, write down the name and weight of the compound, its formula and formula weight, the date it is made, your name and the course number.

12. Percent Yield:

Report yields to two significant figures (e.g., 64% rather than 64.3%). Reaction yields are not that reproducible, and the third figure is meaningless.

13. a. Observed Physical Properties of Product:

Describe the appearance of your products, for example white powder, pale yellow liquid etc. Report the values you found for your product such as mp range of solids or bp range of liquids (if determined).

b. Literature Values for Physical Properties:

Compare the values you found with the values from the handbook for the same physical properties. Do not report other physical properties. Give the reference to your source of literature values.

14. Tests (report results of chemical or physical (GC, IR) tests run on product):

If qualitative chemical or physical (infrared, gas chromatography) tests were run, report results. For GC, report the conditions used for the analysis, apparent percent purity of product, etc. Attach a copy of spectra and chromatograms to this report. (The originals stay in the notebook.)

15. Comments and Conclusions:

Compare the results of your experiments with those expected. Account for the difference - unusually good technique, spilled product mixtures, variation in procedure followed, etc. Indicate how procedure might be improved.

16. Answers to Questions (attach to report):