

Lab Instructor: _____

Name: _____

DATA

1. Mass of weighing paper or weighing boat (Part 1, Step 1)	
2. Mass of weighing paper (or boat) plus salicylic acid	
3. Mass of salicylic acid	
4. Mass of weighing paper or weighing boat (Part 2, Step 13)	
5. Mass of weighing paper (or boat) plus dry aspirin	
6. Mass of dry aspirin	
7. Melting point/range of crude aspirin (From step 10)	
8. Melting point/range of recrystallized aspirin (From step 13)	

FeCl₃ Test

Substance	Observations when added to FeCl ₃	Positive or negative reaction?
Salicylic acid		
Crude aspirin		
Recrystallized aspirin		
Blank		

Why do the contents of the first test tube show a change in color?

Does the second test tube show a color change? Explain why or why not.

CALCULATIONS (Show all calculation setups, including units)

Show work here	Result
9. Theoretical yield of aspirin	
10. Percent yield of aspirin	

Questions

1. Write out the balanced equation for the reaction between salicylic acid and acetic anhydride.
2. Calculate the theoretical yield of aspirin if you start with 2.687 g of salicylic acid and an excess of acetic anhydride.
3. Calculate the percent yield for the above reaction if the amount of aspirin obtained was 2.301 g.

4. If you were to start with 1.00 g of salicylic acid, what volume of acetic anhydride would be needed to completely react with it? The density of acetic anhydride is 1.082 g/mL.
5. According to your results from part 3 (the melting point and FeCl_3 test) of this experiment, what can you say about the purity of your aspirin? Does the recrystallized aspirin have a greater purity than the crude aspirin? Be as specific as possible.
6. Explain why acetic acid is unlikely to be a contaminant in your solid aspirin.
7. Look up and record the boiling point of acetic acid, and explain why only some of it evaporates from the reaction mixture.
8. If you measured the melting point of the solid product from this experiment and obtained a melting range of 122-128 °C, what does this tell you?
9. Aspirin that has been stored for a long time may give a vinegar-like odor and give a purple color with FeCl_3 . What reaction would cause this to happen?