

Preparation of Aspirin, Methyl Salicylate and Nylon

Experiment #5

Data & Report Sheet

Part A. Preparation of Aspirin

1. Weight of salicylic acid used _____ g

2. Weight of aspirin recovered _____ g

3. Calculate the moles of salicylic acid used:

$$\text{Moles} = \frac{\text{weight (g) [step 1]}}{\text{molecular weight (C}_7\text{H}_6\text{O}_4\text{)}} =$$

4. Calculate the moles of aspirin formed:

$$\text{Moles} = \frac{\text{weight (g) [step 2]}}{\text{molecular weight (C}_9\text{H}_8\text{O}_3\text{)}} =$$

$$5. \quad \text{Percentage yield} = \frac{\text{moles aspirin formed [step 4]}}{\text{moles salicylic acid used [step 3]}} \times 100 =$$

Questions

1. Write the equation for the preparation of aspirin from salicylic acid and acetic anhydride.

2. Have you prepared pure aspirin? Do you expect any other material to be in your product? What impurities might be in your product after washing and filtering it?

3. Are aspirin tablets pure aspirin? If they are not pure aspirin, what else do they contain?

4. How would you describe the aroma of methyl salicylate?

5. Aspirin and methyl salicylate are both esters of salicylic acid. Do these two different chemical compounds have any similar physiological actions? Describe some of their physiological actions.

6. In the preparation of nylon, there are 2 phases, an aqueous phase (containing diamino-hexane) and an organic phase (with adipoyl chloride). Why is there only a small amount of nylon at the interface of the two phases at any given time, yet it seems you can continue removing it and more appears? What is going on at the interface of the two solutions?

7. Nylon is classified as a condensation polymer. Describe what is meant by the term condensation polymer and what other product is formed in the reaction producing nylon.