**Recrystallizing Benzoic Acid**

Weigh about 1.00 g of impure benzoic acid and transfer it to a 125-ml Erlenmeyer flask. Using a graduated cylinder, add about 20 ml distilled water and bring the mixture to the boiling point by heating on a hot plate, while stirring the mixture and boiling gently to dissolve benzoic acid completely.

Remove the flask from the hot plate and examine the solution. If there are particles of benzoic acid still undissolved, then add an additional amount of hot or cold water in small increments and resume boiling. The objective is to dissolve the entire solid in minimum amount of solvent. Do not add too much water or the solution will not be saturated and the yield of purified benzoic acid will be reduced. Keep adding water in small amounts (several drops at a time from a Pasteur pipette) until all of the benzoic acid is dissolved and the solution is boiling. Be patient so that excess solvent is not used.

Once the solid has completely dissolved allow the flask to cool slowly. This will give the best-shaped crystals after about 5-10 minutes. If crystallization does not occur after 10 minutes, scrape the sides of the flask with a glass rod hard enough to audibly scratch the interior surface of the flask. This may dislodge small crystals that will drop into the solution and "seed" the solution, helping to induce crystallization. Sometimes the vibration of squeaking glass induces a seed crystal to form. A seed crystal can serve as a nucleation point for the crystallization process. After several minutes, most of your solid should precipitate. Cool the mixture in an ice bath to maximize recovery of purified solid.

Collect your solid by vacuum filtration using a Buchner funnel with correctly-fitted filter paper. Pour the chilled mixture into the Buchner funnel. Try to get the solid to form a layer on top of the filter paper- this is called a **wet cake**. Once the solid is layered on the filter paper, covered with another **layer of solvent**, then attach vacuum tube to **begin suction**. The water should filter quickly.  Get all the solid out of the flask using a spatula or stirring rod.  Rinsing with 1 or 2 mL of **cold** water helps get the crystals out of the flask, and rinsing the wet cake helps remove impurities. Disconnect vacuum tube when adding rinses so that rinse solvent forms a layer on top of wet cake.

Let the aspirator run for a few minutes to start air-drying the crystals.  Use a spatula to lift the filter paper and crystals out of the Buchner funnel, press them as dry as possible on a large clean paper towel (hand dry), and allow them to dry completely. Transfer the dry sample to a pre-weigh weighing paper or better yet, a tared container. Determine the weigh the DRY crystals of recovered benzoic acid.

Calculate the percent recovery and obtain a mp of your purified solid.

**MiniReport**

**NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Turn in this sheet as your cover page**

Include a one-page summary with:

* Identity and mass of impure solid
* Identity of recrystallizing solvent
* Calculation to determine amount of solvent needed
* Total volume of recrystallizing solvent actually used for dissolution
* Total volume of wash solvent used- record individual wash volumes in notebook
* Volume of filtrate- should be approximately equal to amount needed to dissolve plus washes
* Mass of dry, purified solid
* Mp of pure substance
* Calculation of loss to filtrate using solubility of benzoic acid
* Percent recovery of pure compound

Include your lab notebook pages which should have entries for all the items above plus any observations