

Experiment No. 10

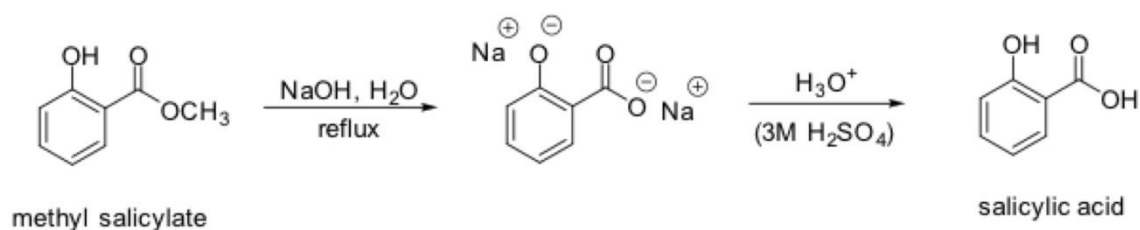
Aim of the experiment: To synthesize salicylic acid from alkyl benzoate.

Apparatus required: Round bottomed flasks, beakers, conical flasks, water bath vessel, reagent bottles, funnel, measuring cylinder, pipette, stirrer, etc.

Chemicals required: Methyl salicylate, sulfuric acid, sodium hydroxide.

Principle: Esters are hydrolyzed either by acids or bases. Alkaline hydrolysis of an ester is called saponification and is an irreversible process. Here one mole of methyl salicylate reacts with two moles of NaOH to form sodium salicylate with methanol and water. Sodium salicylate is reacted with sulphuric acid or hydrochloric acid to remove the sodium ion and forms salicylic acid with sodium sulphate as by product.

Reaction:



Procedure: Take 3gm (2.56ml) of methyl salicylate into a 200ml of round bottom flask, add 50 ml of NaOH solution is refluxed for 30-45 min. from the point the mixture starts to boil, if the reaction mixture still has oil or is cloudy continued to reflux. Once the reaction mixture is clear and homogenous, the solution is checked whether it no longer having smell of oil of wintergreen. If the smell still exists, then continued to reflux for some more min. boiling chips are removed and solution is transferred to a 250 ml beaker. Add 6ml H₂SO₄ or HCl is added slowly with stirring. The reaction mixture is cooled in an ice bath for 10 min. vacuum filtered and rinsed with ice cold water.

Calculation

Percentage yield = (practical yield/theoretical yield)×100