

Aim: To prepare and Submit Acetanilide from Aniline.

Reference:

1. Kar Ashutosh, Advanced Practical Medicinal Chemistry, New Age International (P) Limited Publication, New Delhi, Page No. – 71.

Requirement:

Apparatus: Beaker, Glass Road, Measuring cylinder, funnel, filter paper, etc.

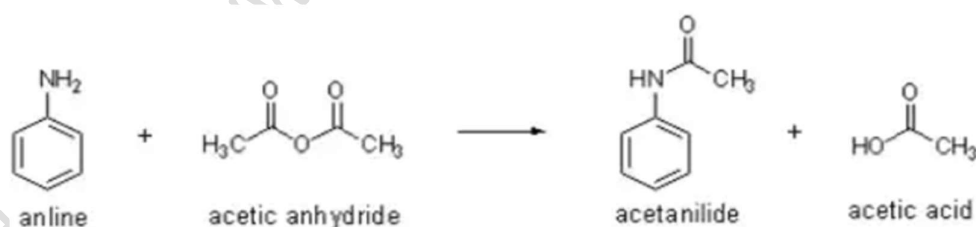
Chemicals: Aniline – 10 ml, Acetic anhydride – 13 ml, Sodium acetate – 16.5 g, Conc. HCL – 9 ml.

Principle:

The freshly redistilled aniline is almost a colorless oily liquid practically insoluble in water. Therefore, before the ‘acetylation,’ aniline must be made soluble in the aqueous medium. It can be accomplished by adding a requisite amount of concentrated HCl, whereby the highly reactive amino function quickly takes up a proton from the dissociation of HCl in water and gets protonated to yield water-soluble aniline hydrochloride.

Subsequently, the soluble form of aniline is reacted with acetic anhydride in the presence of sodium acetate. The acetate ion obtained from the salt hydrolysis (sodium acetate) helps sustain the acetylation reaction in the forward direction to yield acetanilide ultimately.

Reaction:



Use: Acetanilide is mainly used as an intermediate for synthesizing pharmaceutical compounds and as an additive in hydrogen peroxide, varnishes, polymers, and the rubber industry.

Procedure:

1. Pour 10 ml of aniline into a 500 ml beaker, and then introduce 9 ml of concentrated hydrochloric acid and 25 ml of distilled water. Mix the contents thoroughly using a glass rod until the aniline dissolves.
2. In a separate beaker, dissolve 16.5 g of sodium acetate in 50 ml of distilled water.
3. To the clear aniline solution, gradually add 13 ml of acetic anhydride in small increments while continuously stirring vigorously. Continue until a perfectly homogeneous solution is achieved.
4. Immediately transfer the resulting solution into the sodium acetate solution.
5. Stir the combined contents thoroughly and place the reactant beaker into an ice bath.
6. Shining crystals of Acetanilide separate out.

Calculation:

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Result:

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