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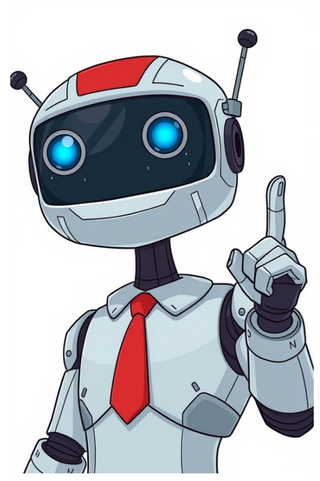

Acetanilide is a highly toxic compound that can be absorbed through the skin, and its use requires proper ventilation in a fume hood. Concentrated hydrochloric acid can cause severe burns, and acetic anhydride is known to be lachrymatory, causing eye irritation. Paraphrased text here ========== Filter off the crystals, wash them with water and dry in the folds of filter paper. Observations: The colour of the crystals is colourless. They are plate shaped. Melting point is 114oC. Results and Discussion: The yield of Acetanilide is _____gm. Precautions: Do not inhale the fumes of acetic anhydride. Always carry out experiments in a fuming chamber or near the window. Use the water condenser for refluxing the reaction mixture. Dry the crystals of acetanilide before finding the weight and its melting point Keep visiting BYJU'S to learn more about class 12 CBSE chemistry practicals. Acetic anhydride and acetyl chloride are two acetylating agents. Zinc is added to prevent oxidation of aniline during the reaction. It reduces coloured impurities present in the solution. The mixture of concentrated acids like nitric acid and sulphuric acid is called nitrating mixture. The IUPAC name for acetanilide is N-phenylacetamide Acetanilide is used in synthesis of penicillin and other pharmaceuticals. It is also used as an antipyretic agent means fever reducing agent. Put your understanding of this concept to test by answering a few MCQs. Click 'Start Quiz' to begin! Select the correct answer and click on the "Finish" buttonCheck your score and answers at the end of the quiz Visit BYJU'S for all Chemistry related queries and study materials 0 out of 0 are wrong 0 out of 0 are correct 0 out of 0 are Unattempted View Quiz Answers and Analysis Safety Features Aniline is toxic and can be absorbed through the skin. Use in a fume hood. Concentrated hydrochloric acid can cause severe burns. Acetic anhydride is lachrymatory. To 60 mL water in a 100 mL Erlenmeyer flask add 2 mL concentrated hydrochloric acid with mixing. The next step must be done in the fume hood. Add 2 mL aniline and swirl the mixture. If solution is coloured, add small amount of decolourising charcoal, swirl flask for about one minute and filter off carbon using fluted filter paper (see appendix). In separate container dissolve 3 g sodium acetate in 10 mL water. Warm anilinium chloride solution to 50°C on water bath and add 3 mL acetic anhydride. Swirl to effect dissolution and add aqueous sodium acetate quickly. Swirl flask a couple of times and set it in ice-bath for 20 min. Filter, with suction, crystals of amide formed and wash with small amount of ice-cold water. Continue to apply suction to Büchner funnel for few minutes. Dry material between filter papers and submit your sample for assessment. Determine yield and melting point of product. Inspect I.R. spectra of aniline and acetanilide and record position of major bands that differ between two (see appendix 3). Relate this data to reaction that has occurred. Carry out nitrous acid test on 1° aliphatic amine and 1°, 2°, 3° aromatic amines provided. Record results in tabular form.the reaction mixture is added to cold water. The acetanilide, being less soluble in cold water, will precipitate out. This step is crucial to isolate the product from the reaction mixture. It is typically essential to eliminate surplus acetic anhydride along with by-product acetic acid through water washing. Following this, acetanilide is isolated using an organic solvent such as ethanol, and the solvent is eliminated via evaporation. Ultimately, purified acetanilide can be attained through recrystallization. 4. Reaction considerations (1) Temperature and duration Although the reaction is gentle, controlling temperature and reaction time is crucial. Excessively high temperatures may induce side reactions, leading to impure products. However, prolonged reaction times might reduce acetanilide yield. (2) Acetic anhydride quantity The amount of acetic anhydride should be balanced, as excess can result in unreacted residue, affecting acetanilide purity. (3) Safety precautions Aniline and acetic anhydride are both irritating and toxic. Protective gear must be worn during the reaction to ensure proper ventilation. 5. Acetanilide applications and market demand As a key intermediate, acetanilide is extensively used in pharmaceuticals, notably for acetaminophen synthesis. It also serves in dye and pesticide production, maintaining stable market demand. Its significance in aniline preparation and application remains vital. Summary Acetanilide can be efficiently synthesized via aniline reacting with acetic anhydride. While the process is straightforward, attention to reaction conditions and safety is necessary. Its wide industrial use ensures future market demand, making knowledge of its preparation crucial for chemical professionals. Acetanilide preparation from aniline involves refluxing aniline with glacial acetic acid using sodium acetate. This method is standard for acetanilide synthesis from aniline. Chemical reaction details are provided. Required materials include freshly distilled aniline, glacial acetic acid, and sodium acetate. Acetanilide, an important organic compound, is widely used in pharmaceuticals. It is a white, odorless solid, commonly used in chemistry labs to teach organic synthesis. Prepared by acetylation of aniline, its preparation aims to demonstrate organic compound synthesis. Zinc dust prevents aniline oxidation during the reaction. The chemical equation is shown. Acetanilide is also known by other names. Equipment includes a 100 mL round-bottom flask, reflux condenser, and various glassware. Procedure requires careful apparatus cleaning. Aniline and acetic anhydride mixture is added to the flask, followed by zinc dust. Heating occurs via a sand bath for 30-40 minutes. After cooling, the mixture is poured into ice-cold water, filtered, and recrystallized. Recrystallization involves dissolving in water and adding ethanol before heating.Acetanilide recrystallization process involves stirring and filtering crystals, followed by observation and testing. ==========___ Now, cool down the solution and filter it. You will get the crystals almost looking like this (Image will be uploaded soon) After performing the recrystallization process twice, determine the melting point of the crystals obtained. Observation Table Colour of the crystals White Odour of crystals Odourless Appearance Flaky Melting point 1150C Result Weight of the acetanilide crystals obtained = _____g. Its melting point is 115℃. Precautions Aniline is a carcinogenic compound so it must be handled very carefully. Don't inhale the fumes of acetic anhydride. Always dry the crystals before taking their weight and melting point to avoid any error due to moisture. Keep stirring the reaction mixture during the experiment. Vigorous heating is a must when the mixture is added to ice-cold water. Various Acetanilide Tests Beilstein Test Acetylation reaction will usually convert aniline into acetanilide during the Beilstein test. Through the acetylation process, the amine will be converted into its acetamide analogue. The goal was to test two reactions and identify an unknown amine/acetamide product. Aniline HCl (concentrated HCl is 37% w/w) is used during this process. Experiment Process In 14 ml of water, dissolve the aniline 500 mg. It should be noted that aniline is not water-resistant and two layers must be considered. 0.45 mL of concentrated acid is added. Prepare a 530 mg solution of sodium acetate in 3 mL of water and 0.6 mL of anhydride. Swipe the aniline hydrochloride anhydride solution in water, and immediately add the sodium acetate solution As acetanilide passes, the response becomes white. Cool the solution in the ice bath before vacuum filtering to collect solid acetanilide. Rehydrate water from 95 percent ethanol - a small amount of tiny water is needed. To start the Beilstein test, clean the copper cord by holding it in place for a while. Return the cord to the oven after touching it in a composite sample. The presence of halogen is indicated by the presence of blue within the flames. Before trying the procedure on your own, it is a good idea to test it on a compound known to contain halogen. Green Method Acetanilide is soluble in ethanol in a very round flask. Water is then added to dissolve the barrier and ceric nitrate. This solution has been added to the add-on. call drop, this solution was added to the acetanilide solution during the conical flask. After completion of the addition, white crystals are formed after stirring the reaction mixture for 10 minutes in the heat. Then pour a glass of cold drinking water. The solid was separated from the white crystals using a dry Buchner panel. The melting point is 114.3 °C. Because aniline cannot be replaced by p - due to re-activation (aniline nitration produces trinitroaniline), acetylation is performed before chlorosulfonation. As a result, monosubstituted sulfonamide cannot be detected. When aniline is used, electrophilic switching occurs in o- and p-positions, but in acetanilide, electrons are exposed to the ring and rarely contain C carbonyl, resulting in electron deficiency due to polarization. During chemical reactions, zinc is used to stop aniline from oxidizing. Acetanilide is an important component of the drug and is used as a febrifuge. Acetylating aniline containing anhydride within strong acids may also produce acetanilide. Aniline is dissolved in acid, then anhydride is added and mixed well. Pour the mixture into a glass of water containing sodium acetate. Ethyl alcohol is usually absorbed by the isolate and also acts on acetanilide. Uses of Acetanilide in Daily Life Acetanilide is a colourless, glossy chemical that can be used to make plates. It is used in photography.