Experiment: 06

AIM: To prepare and submit Phenothiazine from Diphenyl amine and calculate its percentage yield.

REFERENCES:

1. Vogel's Textbook of Practical Organic Chemistry by Brian S. Furniss, Antony J. Hannaford, Peter W. G. Smith & Austin R. Tatchell; Fifth Edition; Page No. …...

REQUIREMENTS:

Chemicals:

Diphenyl amine, Sulphur, Iodine, Ethanol, Activated charcoal, etc.

Apparatus:

RBF, Reflux condenser, Oil bath, porcelain dish, Heating mantle, Thermometer, Magnetic stirrer etc.

Principle:

Diphenyl amine, when treated with Sulphur, undergoes a fusion reaction in the presence of iodine

to give phenothiazine, a tricyclic compound with the rapid evolution of hydrogen sulfide.

Use:

Can be used as an antibacterial and antiviral agent.

PROCEDURE

1. Place 16.8 g (0.1 mol) of Diphenylamine, 6.4 g (0.2 mol) of sulfur, and 300 mg of iodine in a 100 ml round-bottom flask.

2. Add 50 ml of xylene or another suitable high-boiling solvent to the flask. Set up a reflux condenser on the flask and heat the mixture using an oil bath or heating mantle at 190-200°C.

3. Reflux the mixture for 30-40 minutes. During this process, you will observe the evolution of hydrogen sulfide gas.

4. Allow the reaction mixture to cool to room temperature. Grind the cooled reaction mass in a porcelain dish, then add 5 ml of ethanol and a pinch of activated charcoal. Heat the mixture until the solid dissolves completely.

5. Filter the hot solution to remove any insoluble impurities. Pour the filtered solution into 125 ml of water and mix carefully. Let the mixture stand for 15 minutes. Add concentrated hydrochloric acid to the filtrate until it becomes strongly acidic.

6. Cool the acidic solution in an ice bath to precipitate the Phenothiazine. Filter off the precipitated Phenothiazine under suction and recrystallize from ethanol to obtain pure Phenothiazine.

Calculation

……

…..

Result:

The Phenothiazine was synthesised from Diphenylamine, and the percentage yield was found to be………..%.