Experiment No. 10

Object: To prepare Benzil from Benzoin by Oxidation reaction.

References:-

1. Mann F. G., Saunders B. C., A text book of "practical organic chemistry", Pearson education, published by Dorling Kindersley (India) Pvt. Ltd., 4th edition, page no. 234.

2. Furniss B. S., Hannaford A. J., Smmith P. W. G., Tatchell A. R., " Vogel's textbook of practical organic chemistry", ELBS and Longmans green Co. Ltd., London, Fifth edition, page no. 1045.

Principle:-

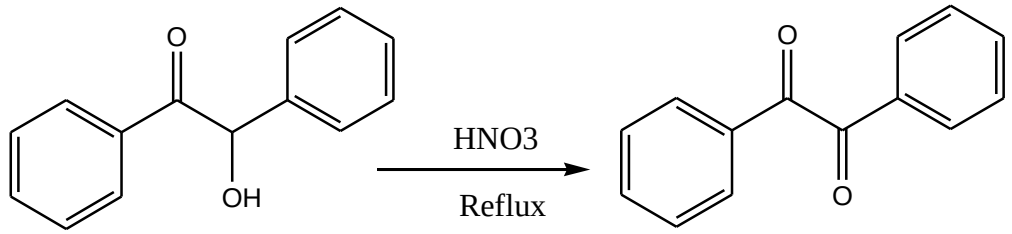
Here alcohol group if benzoin is oxidized to ketone group forming benzil in the presence of concentrated nitric acid. Nitration of aromatic ring is not occurring as sulphuric acid is totally absent in the whole process.

Requirements:-

Chemicals:- Benzoin 10g.; Nitric acid 25ml.

Glasswares:- Round bottomed flask, Reflux water-condenser, Beaker, Measuring cylinder, Pipette,

Reaction scheme:-



benzil

Calculation:-

$$Theoretical\ yield = \frac{molecular\ weight\ of\ product}{molecular\ weght\ of\ reactant} \times weigth\ of\ reactant$$

Practical Yield =

$$Percentage\ yield = \frac{Practical\ yield}{Theoretical\ yield} \times 100$$

Procedure:-

1. Dissolve 10g. powdered benzoin and 25ml. of concentrated nitric acid in a 150ml.
2. Fit reflux water –condenser to the flask and heat the flask on a boiling water bath.

3. Continue the heating 1-1:30 minutes until the crystalline benzoin will completely replaced by the oily benzil.
4. Then pour the mixture into a beaker of cold water with vigorous stirring.
5. Filter off the yellow solids and wash thoroughly with water to ensure complete elimination of acid.
6. Recrystallise from methylated or rectified spirit, benzil separates as clear yellow crystals, M. P. 95°C, yield about 9.8g.