Notes on the reactions of Phenol

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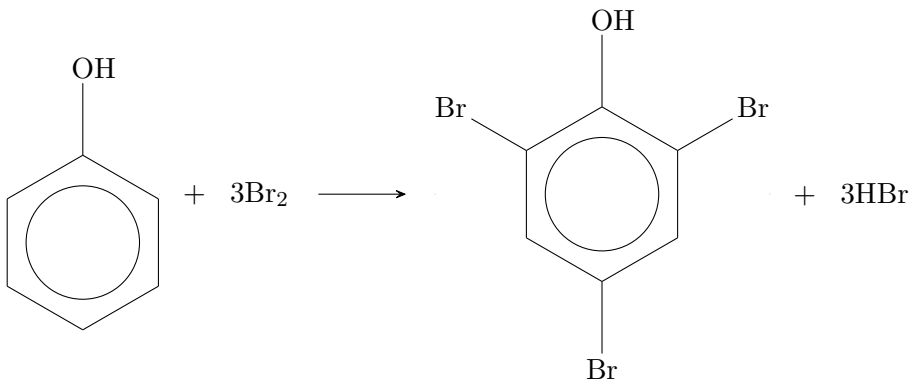
1 Introduction

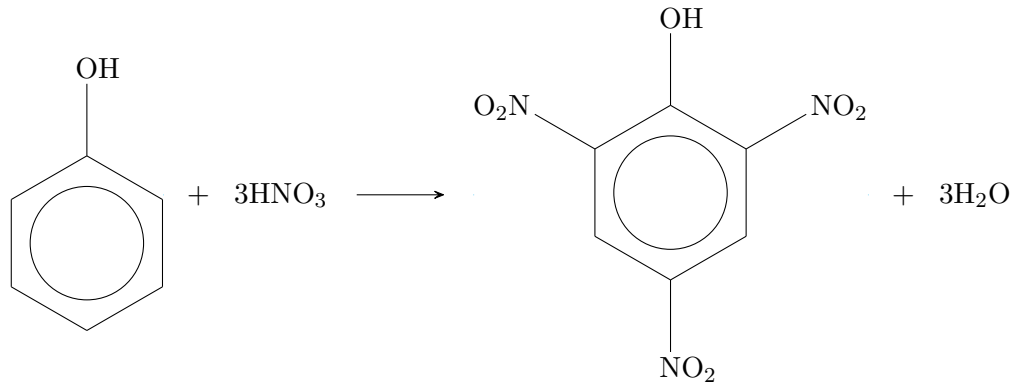
Phenol is a molecule that is basically a hydroxyl group attatched to a benzene molecule. It undergoes many similar electrophilic substitution reactions like that of benzene.

2 Theory

When bromine water is added to a solution of phenol in a water, a electrophilic multi-substitution takes place. In this reaction, the bromine water is decolourised and a white precipitate of 2,4,6 - tribromophenol is produced, which smells of antisceptic:



When dilute nitric acid is added to a solution of phenol, a white precipitate of 2,4,6 - trinitrophenol, sometimes called picric acid:



The reason for the certain positions of the substituted molecules is due to the resonance structure of phenol where the ring of delocalised electrons is more susceptible to attack at the 2, 4, and 6 positions.