Effect of Crown Ethers on the Oxidation of Some Tertiary Amines by Potassium hexacyanoferrate (III) in alkaline Sodium hydroxide Solution

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Abstract

The effect of 18-Crown-6 and Benzo-15-Crown-5 on the oxidation of triethylamine and 1-methyl pyrrolidin by hexacyanoferrate (III) in aqueous Solution were studied at constant concentration of sodium hydroxide. It was found that these crown ethers cause a retardation in the oxidation process and this retardation depends on the concentration of crown ether.

In general, 18-Crown-6 has a more pronounced retardation than B-15-crown-5 on the oxidation of 1-methyl pyrrolidin while B15C5 has more pronounced retardation on the oxidation of triethylamine.

The effect of sodium hydroxide on the oxidation process was studied, and it was found that as the concentration of sodium hydroxide increases, the rate of reaction increases.

A mechanism in basic media which involves an electron transfer followed by proton abstraction was suggested and discussed.