

OXIDATIVE DEGRADATION OF PHENOL AND CHLOROPHENOLS MODIFIED WITH HOMOGENEOUS CATALYST IN A LARGE SCALE CSTR

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ABSTRACT

Degradation study of phenol and 2- and 4-chlorophenols in presence of ferrous ion catalyst are investigated in a large scale continuous stirred tank reactor of volume 180 litre. The study has been attempted especially to verify and to compare with the reaction rate constants obtained in laboratory scale study. Effect of changing reaction parameters like initial concentration of substrates, concentration of hydrogen peroxide and ferrous ion catalyst show same trend of degradation in all experimental conditions. Though the trend observed in the large scale CSTR is same but percentage conversions of substrates are comparatively lower than that of lab scale, portray the effect of scaling-up. Present study will no doubt be a step to transfer of the treatment technology from lab-scale to large-scale and then large-scale to pilot-scale for commercialization.

KEYWORDS: Catalyst, Degradation, Phenol, Chlorophenol, Hydrogen Peroxide, Large CSTR