

Abstract

This work is dedicated to the removal of free cyanide from aqueous solution by oxidation with hydrogen peroxide H_2O_2 catalyzed by neutral activated alumina. Effects of initial molar ratio $[\text{H}_2\text{O}_2]_0/[\text{CN}^-]_0$, catalyst amount, pH, and temperature on cyanide removal have been examined. The presence of activated alumina has increased the reaction rate showing thus, a catalytic activity. The rate of removal of cyanides increases with rising initial molar ratio $[\text{H}_2\text{O}_2]_0/[\text{CN}^-]_0$ but decreases at pH 10 to 12. Increasing the alumina amount from 1.0 to 30 g/L has a beneficial effect, and increasing the temperature from 20 °C to 35 °C improves cyanide removal. The kinetics of cyanide removal has been found to be of pseudo-first-order with respect to cyanide and the rate constants have been determined