

THE USE OF JAR TESTS FOR THE DETERMINATION OF COAGULATION CONDITIONS OF A SECONDARY EFFLUENT

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ABSTRACT

The objectives of this study were the examination of chemical coagulation of a secondary effluent from a municipal wastewater treatment plant by using pre-hydrolyzed metal salts of aluminum and iron in the form of AlCl_3 and FeCl_3 respectively, and the determination of optimum experimental conditions resulting in efficient removal of organic loading, phosphorous and nitrogen for the production of high quality reclaimed wastewater. For both coagulants, organic loading removal increased with the coagulant dosage, and ferric ions gave the highest COD removal efficiency reaching up to 80 %. However, pre-hydrolysis of metal salts did not affect organic matter removal capacity. Phosphorous removal decreased with the degree of pre-hydrolysis, due to the competing action of phosphate and hydroxyl ions to occupy active sites on the polymeric complex species formed during pre-hydrolysis. In addition, ammonia nitrogen removal lower than 50% was observed for both coagulants.