



DENITRIFYING POTENTIAL OF AN ACTIVATED SLUDGE DERIVED CONSORTIUM

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Abstract

The aim of this work was the evaluation of the denitrification potential of a consortium of activated sludge adapted to anoxic conditions. As the carbon source is the main parameter influencing the denitrification process, in the first stage three carbon sources (acetate, citrate and glucose) were assayed in batch activity tests. The highest denitrification efficiency was attained with acetate, being nitrate and nitrite completely reduced. The adapted sludge was then used as a potential denitrifying consortium on an anoxic rotating biological contactor (RBC) with acetate as carbon source. Two C/N ratios were assayed (2 and 3) as well as two nitrate loads (220 and 300 mg/L). At the highest nitrate concentration, the best denitrification efficiency (nitrate removal higher than 99% without nitrite or acetate accumulation) was attained at C/N=3. From the results it can be concluded that the activated sludge possesses high denitrifying capacity and can easily be adapted to anoxic conditions. Moreover, the RBC revealed to be a good alternative solution to the conventional processes.

Key words: anoxic rotating biological contactor, biofilm, carbon source, carbon/nitrogen ratio; denitrification

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