

Thesis Title Aerobic Submerged Biofilm Reactor for Wastewater
 Treatment with Polyurethane Foam Medium

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ABSTRACT

This study was an experiment of a wastewater treatment process of an aerobic submerged biofilm reactor using polyurethane foam as a medium. The models consisted of completely mixed tanks in which dispersed polyurethane foam cubes moving freely in the reactor by aeration.

The synthetic wastewater with the COD concentration of 500 mg/l was used as influent feeding into three sets of reactors. The influent flow rates were 25, 45, and 60 l/d, the hydraulic retention time were 14, 8, and 6 hours or converted to organic loading of 4, 7.5, and 10 kgCOD/m³.d or Volumetric loading 50, 94, and 125 lbCOD/1000ft³.d, respectively.

The experimental results show that the efficiency of COD removal were 95.23 %, 91.39 %, and 87.95 % for the organic loading of 4, 7.5, and 10 kgCOD/m³.d, respectively. It was also found that with the same organic loadings the efficiency of SS removal were 96.90 %, 92.86 %, and 87.81 %, respectively.

It can be concluded from the experimental results that a good quality effluent was produced. However, in the long term of operation, the media may get clogged and decrease in removal efficiency. It is suggested similar experiments should be carried out in future study.