CHARACTERISTIC OF GRANULATED ACTIVATED SLUDGE FED WITH GLYCERIN FRACTION FROM BIODIESEL PRODUCTION

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Abstract: In the presented research glycerin fraction from biodiesel industry was used for granulated aerobic activated sludge production in a typical sequencing batch reactor (h/d equal 2.1). After 7 weeks of operation, granulated activated sludge with SVI at the level of 40–50 $cm^3 \cdot g^{-1}$ was obtained. At organic compounds load of 1.43 ± 0.1 mg COD·mg $VSS^{-1} \cdot d^{-1}$, the efficiency of carbon removal was 94.14 ± 2.7% and most of the introduced COD was removed during the first 2–3 hours of aeration. The sieve analysis revealed that 60% (w/w) of biomass consisted of particles with a diameter in the range of 4–8 mm. A free settling test procedure proved that granules with a diameter between 2–4 mm were numerically most abundant in biomass (32.3%) and that the settling volume, mass and Reynolds number values significantly ($p < 0.05$) increased parallel with increasing granules diameter. Adverse tendency was observed for the mean effective, buoyant density of a granule in a liquid.