

Analysis of iron ore sinter particles (IOSP) on the treatment of wastewater by a biological aerated filter

Li-Hui Huang*, Tao Yang, Yuan-Yuan Sun, Da-Chuan Zhao

Shandong Key Laboratory of Water Pollution Control and Resource Reuse, School of Environmental Science and Engineering, Shandong University, Jinan, 250100, China
Tel. +86 (531) 88366873; Fax +86 (531) 88364513; email: huanglihui9986@126.com

Received 9 September 2011; Accepted in revised form 18 December 2010

ABSTRACT

Iron ore sinter particles (IOSP) and clay ceramic particles (CCP) were applied in two lab-scale up-flow biological aerated filters (BAF) for wastewater treatment to investigate the availability of IOSP used as biofilm medium compared with CCP. It took about 16 days for IOSP reactor to reach the stable effluent and 4 days late for CCP reactor, according to the removal efficiencies of chemical oxygen demand (COD_{Cr}) and ammonia nitrogen ($\text{NH}_4^+\text{-N}$). Compared with CCP reactor, higher efficiencies of COD_{Cr} and $\text{NH}_4^+\text{-N}$ were found in IOSP reactor in the whole experiment. And there was a great difference on the final biomass densities (39.12 mg/g for IOSP and 25.95 mg/g for CCP). Better efficiency on removing total phosphorus (TP) under aeration was found in IOSP reactor (about 70%), while less than 40% in CCP reactor. Moreover, better capabilities responding to low pH in IOSP reactor were found compared with CCP reactor. For dye wastewater with C.I. Reactive Blue 19, it was shown that IOSP reactor had greater removal efficiency than CCP reactor.

Keywords: Iron ore sinter particles; Biological aerated filter; Total phosphorus; Low pH

* Corresponding author.