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Aerobic treatment of oilfield wastewater with a bio-contact oxidation reactor

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ABSTRACT

This paper investigated the use of Bacillus coagulans W-15 immobilized on carriers in a bio-contact oxidation reactor to treat oilfield produced water. It researched the effect of hydraulic retention time (HRT) on the removal efficiencies of chemical oxidation demand (COD) and total organic carbon (TOC). The results showed that, when the HRT was 24 and 32 h, the COD of effluent water were less than or equal to 352 mg/L, the removal efficiencies of COD and TOC were greater than or equal to 75% and 68%, respectively. The degradation efficiencies in the bio-contact oxidation reactor immobilized with W-5 were estimated to be 73% for total oil, and 86% for the gas chromatography resolved compounds. The quality of the effluent water met the professional emission standard of petrochemical industry of China.

Keywords: Produced water; Bio-contact oxidation; Immobilization; Squalane

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