Filtration Characteristics in the Submerged Membrane Bioreactor with Waste Lime Carrier

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Membrane bioreactor (MBR) technology has recently become an established process for the treatment of municipal and industrial wastewaters. The advantages of MBR systems are including maintaining high performance, low operating cost and simplicity of operation without removal of excess sludge. However, membrane fouling is a major drawback of this technology. To overcome this disadvantage, we investigated the filtration characteristics of the membrane by packing a waste lime support carrier in to the submerged membrane bioreactor (SMBR) process. TMP according to time elapse reached 30 kPa within 160 h when the support carrier was not packed. However, as the support carrier volume fraction was increased from 10% to 20% and 30%, membrane filtration time can be extended from 160 h to 280 h and 500 h respectively. As the support carrier volume fraction was increased, membrane fouling was mitigated, membrane filtration time could be extended, and stable treatment efficiency could be obtained.