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Immobilised *Methanosarcina* and Strength Organic Wastewater Treatment

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Abstract

There are many shortcomings in anaerobic strength organic wastewater treatment with immobilized *Methanosarcina*. In this paper a new immobilization method is presented and strength organic wastewater is digested using immobilized *Methanosarcina*.

During the soybean cake wastewater treatment, the immobilized *Methanosarcina* can start-up an anaerobic digester quickly and efficiently. The COD of strength organic wastewater can be removed more satisfactorily with steady operation of the anaerobic reactor by immobilized *Methanosarcina* than with operation involving free cells.

The average COD load is 10.02 kg COD/m³, being 1.88 times that of free cells. The average COD removal rate is 85.34%, which is 1.332 times that of free cells. The average gas production rate is 4.03 L/L.d and the highest gas production rate is 9.5 L/L.d. The methane content is 76-78%. The acetic acid content is below 0.2% and pH is in the range of 7.0-7.5.

Key words: immobilized *Methanosarcina*, strength organic wastewater, COD loading, gas production rate