

## OPTIMISATION OF BIOMETHANE PRODUCTION ADMIXING ORGANIC FRACTION OF MUNICIPAL SOLID WASTE AND SEWAGE SLUDGE

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### **Abstract:**

Optimisation of biomethane production was carried out using the co-blended organic fraction of municipal solid waste (OFMSW) and sewage sludge (SS). The co-blending was evaluated at a range of carbon to nitrogen ratios (C:N) using a standard biochemical methane potential (BMP) test. OFMSW has a very high C:N ratio of around 30 and is predominantly carbon whereas by contrast, waste activated sludge has a low ratio of around 4.9 and comprises nitrogen. Co-blending of OFMSW with the thickened sludge from wastewater increases both the amount and the methane produced during anaerobic digestion. The optimum blend occurs at a C:N ratio of 15 which is achieved with 30% of organic fraction of municipal solid waste. The highest methane yield of 161 mL/gVS<sub>removed</sub> was also observed at C:N 15. The highest destruction of volatile solids of 85% was achieved at C:N of 20 followed by C:N 30 and 15. No inhibition was observed by ammonia at any C:N ratio's.

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