

Pyrolysis of Sewage Sludge in Isothermal Degradation

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The management of sewage sludge in an economically and environmentally acceptable manner is one of the critical issues facing Korea society today. About 7500 tons of sewage sludge a day was generated in Korea last year, of which only 15% were utilized with remaining 85% being disposed as a waste. Sewage sludge production in Korea will increase for next 5 years and is expected to reach up to 10,500 tons a day in 2013. The pyrolysis characteristics of sewage sludge, before and after treatment of wet air oxidation, and refuse plastic fuel (RPF) have been measured with a thermo gravimetric analyzer (TGA), respectively. Pyrolysis occurred over 210 °C. The rate of pyrolysis was measured with isothermal conditions (500–800 °C). Two parts of pyrolysis process can be obtained by their chemical composition and properties of sample content. The kinetic rate was found to dominate the pyrolysis process. The kinetic constants estimated for the first order reaction rates. The activation energy ranged from 30.3 kJ/mol to 33.8 kJ/mol for first step and 21.4 kJ/mol to 31.0 kJ/mol for second step.