

## Pretreatment of Rigida Pine Wood by Ammonia Recycled Percolation

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A rigida pine wood collected from a Korean forest has been tested for acid and ammonia percolation pretreatment. The rigida pine wood has different physical characteristics from that of pine wood. However, there is little difference in the chemical compositions between the wood. Due to the difference in physical characteristics, the effects of the pretreatment conditions were also quite different. While the optimum temperature was determined to be 150°C for rigida pine wood, the optimum pretreatment was possible at 170°C with pine wood for ammonia pretreatment. Presoaking for 12 hours with ammonia solution before pretreatment was helpful to increase the delignification efficiency. The acid percolation was conducted for conversion of this biomass into fermentable sugars. A kinetic study was first conducted using batch reactors wherein the maximum yield was employed and its performance against rigida pine wood was assessed. The performance data of the percolation reactor over the range of 180–200°C, 0.5–5% acid and other process related factors are reported. On the basis of the data batch and the percolation reactor, the kinetics and the mechanism of the hydrolysis reaction are discussed.