

Comparison of lignin properties in Softwood and Hardwood after chemical pretreatment process

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Different types of lignin with different chemical structures are obtained depending on the pretreatment process. Examples include kraft lignin, lignosulfonate, organosolv lignin, and soda lignin, each of which has different characteristics. An in-depth experiment study on the lignocellulosic biomass decomposition in base solution from 150°C to 210°C was conducted. This study used oakwood and pinewood.

The purpose of this study is to compare the degree of delignification through chemical pretreatment processes in lignocellulosic biomass, evaluating the difference of those processes for hardwood and softwood. Oak wood (hardwood) and pine wood (softwood) were treated with NaOH 1 to 5 wt.% and KOH 1 to 5 wt.% in a solid/liquid ratio solution of 1g/10ml and temperatures ranging from 150°C to 210°C for 1 to 2 hours. The main objective of this study is to compare the degree of delignification in both hardwood and softwood and to define optimal pretreatment conditions. In subsequent experiments, the evaluation of various types of lignin for applications in chemical systems can be conducted.

Keywords : Kraft lignin, Soda lignin, Delignification, pretreat, Black Liquor