ABSTRACT

EFFECT OF SODIUM HYDROXIDE ON CHARACTERISTICS OF OIL PALM EMPTY FRUIT BUNCH LIGNIN

By

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A Lignin was extracted from lignocellulosic waste oil palm empty fruit bunch (OPEFB), by delignification method using sodium hydroxide. The variation of NaOH concentrations were used 2, 4, 6, and 8%. The analysis of isolated lignin was conducted using FTIR, $^1$H-NMR, dan $^{13}$C-NMR, determination lignin in black liquor, purity of lignin, density and pH. The result from determination lignin in black liquor, for each NaOH concentrations were 33.360 mg/mL, 35.546 mg/mL, 37.277 mg/mL, and 39.903 mg/mL. The purity of lignin is 72.73%. Concentration of sodium hydroxide does not effect on density and pH from lignin. Density and pH from lignin are 1.28 g/mL and 2.27. Absorptions FTIR on wave number 1.327,03 cm$^{-1}$ showed that there were syringyl unit and 1.211,3 cm$^{-1}$ from guaiacyl unit. The characterization by $^1$H-NMR have also been performed broad signal at 6.6 ppm which indicated there were 2 aromatic protons from syringyl unit and 7.3 ppm from guaiacyl unit, signal singlet at 3.7 ppm indicated alcohol proton from both units. Spectrum $^{13}$C-NMR showed signal at 72.30 ppm and 72.69 ppm which indicated there were C-$\alpha$ from syringyl and guaiacyl units and 101,80 ppm which C-2/C-6 from syringil unit.

Keywords : Lignocellulose, oil palm empty fruit bunch, lignin, delignification.