

ABSTRACT

ANITA NUR OCTAVIA. **The Effect of Addition of Extender on Lignin Phenol Formaldehyde from Coconut husk (*Cocos nucifera*) as Eco-friendly Wood Adhesive.** Undergraduate Thesis. Chemistry Study Program, Faculty of Mathematics and Natural Science. State University of Jakarta. 2021.

This study aims to synthesize Lignin Phenol Formaldehyde (LPF) copolymer from coconut husk with the addition of an extender in the form of tapioca flour as an environmentally friendly wood adhesive. In this study, coconut husk was delignified with 25% NaOH then precipitated with sulfuric acid. The obtained lignin was subjected to qualitative and quantitative tests including color, yield, purity content, phenolic hydroxyl, and lignin equivalent weight. The yield of lignin from coconut husk was 38.92% with a purity of 68%, a phenolic hydroxyl content of 2.47%, and an equivalent molecular weight of 1666.67 g/mol. Lignin is then used for the synthesis of LPF with the addition of a tapioca flour extender with variations of 10%, 20% and 30% of the phenol mass through the resol method with 50% NaOH catalyst. The resulting adhesive was tested for its physical and chemical properties with the adhesive without the addition of an extender as a comparison. The physical and chemical test includes the determination of solids content, pH, viscosity, formaldehyde emission, and adhesive shear strength to determine the quality of the adhesive. Then characterized by FTIR and XRD spectrophotometer. The results showed that the LPF copolymer with the addition of a 10% extender was better than the LPF copolymer without the addition of an extender for wood adhesives with adhesion resistance of 955.34 N and low formaldehyde emission 0.44 mg /L.

Keywords: Adhesive, LPF copolymer, Lignin, Extender