

## **Biodegradability Properties of Polyurethane Film Made from Eucalyptus pellita Wood Polyol**

### **ABSTRACT**

The properties of polyurethane (PU) film are greatly influenced not only by the raw materials but also by the compatibility of polyol and isocyanate. This paper aimed to evaluate the effect of the isocyanate index (NCO/OH ratio) on the biodegradability properties of Eucalyptus pellita PU film. E. pellita wood polyol and polymeric methylene diphenyl diisocyanate (pMDI) were mixed at different NCO/OH ratios (1.8 – 3.0). The PU film was produced through the one-shot method. The effect of the NCO/OH ratio on the biodegradability properties of PU film was evaluated. The rate of biodegradation of PU film by soil burial test decreases proportionally to the NCO/OH ratio. The biodegradation rate is the highest (14.02%) when the NCO/OH ratio is the lowest (1.8). The results of water solubility showed that PU films with low NCO/OH ratios are easily soluble in water. The band associated with the ester compound was detected at nearly 1,060  $\text{cm}^{-1}$ . Based on the findings of this study, increasing the NCO/OH ratio made the PU film from E. pellita less degradable. Therefore, lowering the NCO/OH ratio is an ideal option to produce films with better biodegradability