

PENGARUH *BLEACHING* DAN LAMA ASETILASI TERHADAP KARAKTERISTIK KOMPOSIT PULP BAMBU BETUNG DAN POLI ASAM LAKTAT

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INTISARI

Telah dilakukan penelitian pengaruh *bleaching* dan lama asetilasi terhadap karakteristik komposit pulp bambu betung dan poli asam laktat. Tahap pertama adalah analisis komponen pulp bambu betung meliputi kadar air, abu, ekstraktif, hemiselulosa, α -selulosa, dan lignin. Kadar silika pada abu pulp bambu betung dikarakterisasi dengan *Atomic Absorption Microscopy* (AAS). Tahap selanjutnya *bleaching* dan asetilasi pada pulp bambu betung. Karakterisasi pulp bambu betung terasetilasi dilakukan dengan pengukuran derajat asetilasi dan pengukuran gugus fungsional menggunakan *Fourier Transform Infra Red* (FT-IR). Kemudian dibuat komposit dari pulp terasetilasi dan poli asam laktat yang dikarakterisasi menggunakan *Differential Scanning Calorimetry* (DSC), *Universal Testing Machine* (UTM), dan *Scanning Electron Microscope* (SEM).

Hasil penelitian menunjukkan bahwa pulp bambu betung mengandung kadar air sebesar 38,08%, kadar abu 8,73%, kadar ekstraktif 2,52%, kadar hemiselulosa 2,47%, kadar lignin 0,58%, dan kadar α -selulosa 94,43%. Derajat substitusi gugus asetil paling besar pada pulp *bleached* yang diasetilasi selama 5 jam yaitu sebesar 1,27. Hasil *tensile strength* tertinggi pada komposit PLA-pulp *bleached* terasetilasi 5 jam sebesar 18,84 N/mm².

Kata kunci: asetilasi, *bleaching*, komposit, poli asam laktat, pulp bambu betung

THE EFFECTS OF BLEACHING AND ACETYLATION DURATION ON CHARACTERISTICS OF BETUNG BAMBOO PULP AND POLY LACTIC ACID COMPOSITE

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ABSTRACT

The effects of bleaching and acetylation duration on characteristics of betung bamboo pulp and poly lactic acid composite have been analyzed. Firstly, betung bamboo pulp components were analyzed such as content of water, ash, extractive, hemicellulose, α -cellulose, and lignin. The silica content in betung bamboo pulp ash was characterized using *Atomic Absorption Microscopy* (AAS). The next steps were bleaching and acetylation process on betung bamboo pulp. The degree of acetylation and functional groups of acetylated-betung bamboo pulp were calculated and analyzed. Afterward, the composites were made from acetylated pulp and poly lactic acid. The composites were characterized using *Differential Scanning Calorimetry* (DSC), *Universal Testing Machine* (UTM), and *Scanning Electron Microscope* (SEM).

The result showed that the water content in betung bamboo pulp was 38.08%, ash content was 8.73%, extractive content was 2.52%, hemicellulose content was 2.47%, lignin content was 0.58%, and α -selulosa content was 94.43%. The highest degree of acetyl group substitution (1,27) was in bleached pulp-acetylated for 5 h. The highest composite's tensile strength (18.84 N/mm²) was shown in bleached pulp-acetylated for 5 h PLA composite.

Keyword: *acetylation, bamboo betung pulp, bleaching, composite, polylactic acid*