

Karakterisasi dan sifat mekanik bahan nanokomposit selulosa asetat/selulosa asetat butirat-organoclay Tapanuli terinterkalasi surfaktan ODTMABr = Characterization and mechanical properties of nanocomposites of cellulose acetate/cellulose acetate butyrate-Tapanuli organoclay intercalated ODTMABr surfactant / Sri Bandoro Siswayudha

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Abstrak

ABSTRAK

Pemanfaatan bentonit di Indonesia sebagai nanofiller masih belum optimal. Sintesis nanokomposit selulosa asetat (SA)/selulosa asetat butirat (SAB) dengan penguat organoclay bertujuan untuk mendapatkan plastik yang mudah terurai dengan sifat mekanik dan sifat fisis dari masing-masing komposit. Penelitian ini dilakukan melalui beberapa tahap yaitu preparasi bentonit, purifikasi karbonat, sintesis Na-Bentonit, sintesis organoclay-ODTMABr (OCT-C18) dan sintesis nanokomposit SA serta SA/SAB OCT-C18. Pengaruh terinterkalasi terlihat dari pergeseran puncak (001) difaktogram dengan kenaikan nilai basal spacing dari Na-Bentonit ke OCT yaitu 15,19 Å ke 21,69 Å. Kuat tarik tertinggi terjadi pada membran SA/5wt%SAB yaitu 24,34 MPa. Setelah dilakukan dekomposisi UV selama 24 jam, SA/1wt%OCT-C18 dan SA/5wt%SAB/7wt% OCT-C18 terdegradasi dengan kuat tarik masing-masing 22,03 MPa dan 9,87 MPa.

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ABSTRACT

The utilization of bentonite as nanofiller in Indonesia is not optimum. Nanocomposite synthesis of cellulose acetate (CA) / cellulose acetate butyrate (CAB) with organoclay aims to get biodegradable plastics with mechanical and physical properties of each composite. This research was carried out in several stages, namely bentonite preparation, carbonate purification, Na-Bentonite synthesis, synthesis of organoclay-ODTMABr (OCT-C18), the synthesis of CA as well as CA / CAB OCT-C18 nanocomposites.

Diffraction showed that peak (001) shifted related to the increase of basal spacing from Na-Bentonite to the OCT is 15.19 Å to 21.69 Å. The highest tensile strength from the membrane CA/5wt%CAB which was 24,34 MPa. After 24 hours UV exposure, the CA/1wt%OCT-C18 and CA/5wt%CAB 7wt% OCT-C18 were degraded with each tensile strength of 22,03 MPa and 9,87 Mpa respectively.