

Studi jenis material biomassa pada sintesis busa poliuretan-bio hibrida =
The study of biomass material in the synthesis of hybrid bio-
polyurethane foam / Made Subekti Dwijaya

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Abstrak

ABSTRAK

Material biomassa seperti lignin, pati, dan selulosa merupakan limbah dalam proses pengolahan bubur kayu dan kertas. Pemanfaatan ulang limbah biomassa sebagai material baru belum banyak dilakukan dan umumnya hanya sebagai bahan bakar saja. Dalam penelitian ini dilakukan sintesis busa poliuretan-bio hibrida berbasis material biomassa dengan melakukan poliuretanisasi. Proses sintesis busa poliuretan-bio berbasis material biomassa menggunakan diisosianat berupa Toluene Diisocyanate 80 TDI80 dan polioliol berupa Polipropilen Glikol PPG 2000. Variabel bebas yang digunakan antara lain variasi jenis material biomassa lignin, pati, selulosa sebanyak 21 gram. Hasil yang diperoleh menunjukkan penambahan material biomassa dapat meningkatkan nilai resilience dengan nilai tertinggi oleh sampel PU-Selulosa pada 0.0039 0.0084 Mpa. Penambahan material biomassa juga meningkatkan nilai stabilitas termal busa poliuretan bio dengan nilai tertinggi pada 418.754oC oleh sampel PU-Pati. Morfologi busa poliuretan-bio hibrida berbasis material biomassa cenderung tertutup dengan beberapa partikel yang menempel pada dinding sel busa.

ABSTRACT

Biomass material such as lignin, starch, and cellulose are a pulp and paper fabrication waste. The utilization of lignin as a new materials is not excessive, usually used only as a fuel. Therefore, in this study hybrid biomass based polyurethane bio foam was fabricated by reacting the biomass materials with polyurethane. The synthesis of the hybrid biomass based polyurethane bio foam used Toluene Diisocyanate 80 TDI80 and Polypropylene Glycol PPG 2000 as the polyol. Various kind of biomass material of 21 grams were used as variables of the sample. Samples of hybrid biomass based polyurethane bio foam was characterized by FTIR, STA, SEM, and some of mechanical properties testing. The result showed that biomass material can increase the resilience of hybrid bio polyurethane foam which stood at 0.0039 0.0084 Mpa for PU Cellulose sample. The addition of biomass material also increase the thermal stability which stood at 418.754oC for PU Starch sample The cell morphology of hybrid biomass based polyurethane bio foam were closed with some particle stick onto the cell wall.