

## RINGKASAN

Biopellet merupakan bahan bakar yang berasal dari biomassa dan melalui proses densifikasi dalam pembuatannya. Salah satu biomassa yang dapat dimanfaatkan untuk pembuatan biopellet yaitu tongkol jagung dan daun jati. Proses pembuatan biopellet meliputi persiapan alat dan bahan, pencampuran bahan dan perekat, pencetakan, dan pengeringan. Kualitas dari biopellet dipengaruhi oleh komposisi perekat dan suhu pengeringan.

Tujuan penelitian ini yaitu untuk mengetahui pengaruh komposisi perekat dan suhu pengeringan terhadap karakteristik biopellet tongkol jagung dan daun jati tanpa karbonisasi, mengetahui komposisi perekat dan suhu pengeringan yang optimal dalam proses pembuatan biopellet tongkol jagung dan daun jati tanpa karbonisasi. Penelitian ini menggunakan metode Rancangan Acak Lengkap (RAL) pola faktorial. Faktor komposisi perekat terdiri atas 3 taraf yaitu 10%, 15%, dan 20%. Faktor suhu pengeringan terdiri atas 3 taraf yaitu 90°C, 100°C, dan 110°C. Pengujian kualitas biopellet terdiri dari pengujian kadar abu, kadar air, densitas, kadar zat terbang, laju pembakaran, dan *shatter index*.

Hasil penelitian menunjukkan bahwa nilai kadar abu biopellet berkisar antara 3,73-5,65%, kadar air berkisar antara 7,02-27,65% bb, densitas berkisar antara 0,39-0,61 g/cm<sup>3</sup>, kadar zat terbang berkisar antara 93,65-98,54%, laju pembakaran 0,06-0,09 berkisar antara g/menit, dan *shatter index* berkisar antara 36,78-57,87. Biopellet pada penelitian ini belum memenuhi SNI 8021:2014, namun pada variabel kadar air terdapat perlakuan yang memenuhi standar yaitu perlakuan K1T2, K1T3, K2T3, dan K3T3. Komposisi perekat berpengaruh nyata terhadap kadar air, densitas, kadar zat terbang, dan *shatter index*. Suhu pengeringan berpengaruh nyata terhadap kadar abu, kadar air, densitas, kadar zat terbang, dan laju pembakaran. Hasil penelitian terbaik untuk variabel kadar air, kadar zat terbang, dan laju pembakaran yaitu perekat 10% dan suhu 110°C, kadar abu pada perekat 10% dan suhu 90°C, densitas pada perekat 20% dan suhu 90°C, serta *shatter index* pada perekat 20% dan suhu 110°C.

## SUMMARY

*Biopellets are fuels derived from biomass and undergo a densification process in their manufacture. One of the biomass that can be utilized for making biopellets are corn cobs and teak leaves. The process of making biopellets includes the preparation of tools and materials, mixing of materials and adhesives, printing, and drying. The quality of the biopellets are affected by adhesive composition and drying temperature.*

*The purpose of this study was to determine the effect of the adhesive composition and drying temperature on the characteristics of corncob and teak leaf biopellets without carbonization, to determine the optimal adhesive composition and drying temperature in the process of making corncob and teak leaf biopellets without carbonization. This study used a completely randomized design (CRD) factorial pattern. The adhesive composition factor consists of 3 levels, namely 10%, 15%, and 20%. The drying temperature factor consists of 3 levels, namely 90°C, 100°C, and 110°C. Testing the quality of biopellets consists of testing ash content, moisture content, density, volatile matter content, burning rate, and shatter index.*

*The results showed that the ash content of the biopellets ranged from 3,73-5,65%, the moisture content ranged from 7,02-27,65% wb, the density ranged from 0,39-0,61 g/cm<sup>3</sup>, the volatile matter content ranged from 93,65-98,54%, burning rate ranged from 0,06-0,09 g/minute, and shatter index ranged from 36,78-57,87. The biopellets in this study did not comply with SNI 8021:2014, but in the variable water content there are treatments that meet the standard, namely the KIT2, KIT3, K2T3, and K3T3 treatments. The adhesive composition significantly affected the moisture content, density, volatile matter content, and shatter index. The drying temperature has a significant effect on ash content, moisture content, density, volatile matter content, and combustion rate. The best research results for variables of moisture content, volatile matter content, and burning rate on adhesive 10% and temperature 110°C, ash content on adhesive 10% and temperature 90°C, density on adhesive 20% and temperature 90°C, and shatter index on adhesive 20% and temperature 110°C.*