ABSTRAK

Penelitian ini bertujuan untuk menganalisis sifat fisik dan kimia briket arang berbahan dasar tandan kosong kelapa sawit (TKKS) dengan menggunakan perekat tepung kanji serta mengevaluasi kesesuaiannya terhadap Standar Nasional Indonesia (SNI) 01-6235-2000. Penelitian dilakukan menggunakan metode analisis deskriptif-komparatif dengan pengujian laboratorium terhadap parameter kadar air, kadar abu, kadar zat menguap (volatile matter), kadar karbon terikat (fixed carbon), densitas, dan nilai kalor. Proses pembuatan briket dimulai dari karbonisasi TKKS menggunakan metode pirolisis, kemudian arang dihaluskan, dicampur dengan perekat tepung kanji, dicetak, dan dikeringkan sebelum dilakukan pengujian mutu. Hasil penelitian menunjukkan bahwa briket arang TKKS memiliki kadar air sebesar 11,8%, kadar abu 9,95%, kadar zat menguap 58,8%, kadar karbon terikat 19,5%, densitas 0,2075 g/cm³, dan nilai kalor sebesar 4.272,21 Cal/g. Berdasarkan hasil tersebut, sebagian besar parameter belum memenuhi standar SNI 01-6235-2000, terutama pada kadar air, kadar abu, kadar zat menguap, kadar karbon terikat, dan nilai kalor. Tingginya kadar air dan volatile matter menunjukkan bahwa proses karbonisasi dan pengeringan belum berlangsung optimal. Penelitian ini menunjukkan bahwa limbah TKKS memiliki potensi sebagai bahan baku energi alternatif berupa briket arang, namun masih diperlukan optimasi proses pembuatan agar kualitas briket yang dihasilkan memenuhi standar mutu nasional.

Kata Kunci: Tandan Kosong Kelapa Sawit, Briket Arang, Tepung Kanji, Pirolisis, Biomassa.

Abstract

This study aims to analyze the physical and chemical properties of charcoal briquettes made from oil palm empty fruit bunches (EFB) using tapioca starch as an adhesive and to evaluate their suitability based on the Indonesian National Standard (SNI) 01-6235-2000. The research was conducted using a descriptive-comparative analysis method with laboratory testing on parameters including moisture content, ash content, volatile matter, fixed carbon, density, and calorific value. The briquette manufacturing process began with the carbonization of EFB using the pyrolysis method, followed by grinding the charcoal, mixing it with tapioca starch adhesive, molding, and drying before quality testing was carried out. The results showed that the EFB charcoal briquettes had a moisture content of 11.8%, ash content of 9.95%, volatile matter of 58.8%, fixed carbon of 19.5%, density of 0.2075 g/cm^3, and a calorific value of 4,272.21 Cal/g. Based on these results, most of the parameters did not meet the SNI 01-6235-2000 standards, particularly in moisture content, ash content, volatile matter, fixed carbon, and calorific value. The high moisture and volatile matter contents indicate that the carbonization and drying processes were not optimal. This study shows that oil palm empty fruit bunch waste has potential as a raw material for alternative energy in the form of charcoal briquettes, but optimization of the production process is still needed to improve the briquette quality in accordance with national quality standards.

Keywords: Oil Palm Empty Fruit Bunches, Charcoal Briquettes, Tapioca Starch, Pyrolysis, Biomass.