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Physical treatment of Oil palm Shell for briquette production as bioenergy at remote area

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Abstract

The daily needs of energy in remote areas, Indonesia, is dominated by biomass waste. The abundant types of biomass waste for heat transfer is empty fruits shell (EFS) of oil palm as briquette . This research

discussed a brief analysis of oil palm shell by using physical treatment at different crushing pressure. It was also to examine the adequate size of particle for improving the heating value of briquette . The crushing pressure had a height dimension of 20 cm, as well as the briquette mold with a diameter of 2 cm and a height of 1 cm. The oil palm shell which was applied physical treatment at different crushing pressure of 400 J, 550 J, and 700 J, that resulted in particle size is smaller than 800 µm, 800 µm to 1 700 µm, 1 700 µm to 2 000 µm, and bigger than 2 000 µm. The adequate size of particle for briquette was found to be < 800 µm, which reached the heating value of 20 042.32 J g-1 and ash residue of 20 %. This study showed the advantages of oil palm shell briquette by using physical treatment is suitable and sustainable alternative to daily life use in Indonesia. © The Authors, published by EDP Sciences, 2021.

Author keywords

Biomass; Renewable energy; Waste to energy; Zero waste

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