

Physical Properties and Micro Structure of Fuel Pellet Made from Part of Tree in Southern Thailand

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Biomass pelletization is the basically technique to improve raw biomass properties which tend to provide the enhancement of durability and energy density. There are plentiful of raw biomass resources around the world which divided into two groups; woody and non-woody, that has individual advancement. The present study is the evaluation of woody pellet quality which made from part of common tree in southern Thailand, which are para-rubber sawdust (PS), branches and leaves of she oak (*Casuarina equisetifolia*) (SB and SL) and white samet (*Melaleuca cajuputi*) (WB and WL). The pelletization process was conducted in a single unit pelletizer at compressive temperature and pressure of 130°C and 450 psi, respectively. The higher heating value, compressive strength, moisture content and density of pellet samples were determined to characterize the physical properties. It was found that, the best higher heating value, compressive strength and density were received from WL, CB and WL, respectively. In addition, scanning electron microscope (SEM) images of all pellet samples were proposed to characterized the bonding mechanism.

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