

MALAYSIA NATURAL FIBRES FOR DIVERSED BIO-BASED APPLICATION

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The Physical Properties of Biomass Pellet from Mesocarp and EFB Fibre

Zahurin Halim, Norshazana Mohamad, Nabiha Mohd Noh

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Summary

Malaysia, with its huge oil palm plantations generates abundant palm biomass. In spite of the huge production, the oil consists of only about 10% of the total biomass produced in the plantation. The rest consists of huge amount of oil palm by-product such as oil palm shells, mesocarp fibres and empty fruit bunch (EFB) (from the mills) and oil palm fronds and oil palm trunk (from the field during replanting). This study investigated on the physical properties of biomass pellet from mesocarp and EFB fiber.

The tests done are calorific value test, moisture content analysis, ash content analysis. The pellet formed is suitable for the application of boiler fuel, but the properties of the formed pellet are not achieving the optimum level. Fabrication of combining both the EFB fiber with mesocarp fiber to produce the biomass pellet fuel has been done to improve the physical properties of the pellet. Hybridization of the two fibre produced biomass pellet with lower ash content and higher calorific value for excellent pellet properties.

Introduction

Biomass is a very broad term which is used to describe material of recent biological origin that can be used either as a source of energy or for its chemical components. As such, it includes trees, crops, algae and other plants, as well as agricultural and forest residues. It also includes many materials that are considered as wastes by our society including food and drink manufacturing effluents, sludge, manures, industrial (organic) by-products and the organic fraction of household waste.

Biomass can further be divided into more specific terminology, with different terms for different end uses: heating, power (electricity) generation or transportation. The term bioenergy is used for biomass energy systems that produce heat and/or electricity and biofuels for liquid fuels for transportation. Bioenergy can also be used for cooling using absorption chillers that work on the same principle as your refrigerator (Hon and Joseph, 2008).

Biomass pellet is a type of wood pellet. They are made from wood waste or by-product