

Thesis Title Variables Affecting Coal Briquette Quality
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ABSTRACT

Coal is abundant in Thailand and is being more widely used in industry. In mining, about 35 % of coal produced is left as coal fines. It is then of interest to produce coal briquettes by kneading coal fines with clay as binder and molding the kneaded blend in a double roll press. The shape of the briquette was described as ovoid, being about 15 to 20 gram per piece. The studied variables that affected coal briquette quality were particle size of coal fines, amount of clay added, amount of lime added to get rid of sulfur oxide and odor from combustion, and types of coal fines used by using coal from Banpu mine at Lumpune.

From experiment, the strength of coal briquettes produced from small coal particles were greater than the strength of that produced from larger coal particles. For practical reason, coal particles obtained by milling in a hammer mill with a 9.5 mm. diameter aperture screen were used in later stages of experiment. The suitable amount of clay used depended on particular type of coal particles and coal briquette quality required. The strength of coal briquette increased when the amount of clay increased. The suitable amount of lime was equivalent to Cao/S mole ratio between 1.5 and 3.0. Coal particles

which had about 15 to 30 % ash content could be briquetted, employing differing proportions of clay and lime.

Combustion performance test of coal briquettes was done in a conventional bucket type stove using wood charcoal as reference fuel. It was found that efficiencies were in the range of 28 to 30 %, comparing with 29 % of wood charcoal. Coal briquettes could stand for 2 to 6 kg. weight during compression test.

Additional tests on other types of coal and lignite led to the conclusion that coal and lignite with about 15 to 30 % ash could be briquetted, by adjusting the amount of clay and lime to produce coal briquette having acceptable quality, in view of strength and combustion performance.