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The cassava rhizome is biological waste. The objective of this study is to clarify the properties of coal briquette produced from cassava rhizome referring to three material sources: tapioca chops factory, tapioca starch factory and field, binder ratio which are starch and water in the ratio of 0.1: 0.9, 0.2: 0.8, 0.3: 0.7 and particle sizes of 5, 10, 15 mm. To produce coal briquette, cassava rhizome is burnt by drum kiln method and ground by hammer mill. Then, the coal briquette was pressed by screw extruder to from it in the shape of hollowed cylinder with 5 fins and had length, inner and outer diameter of 10, 1.75 and 4 cm. Proximate analysis of briquette fuel properties was conducted following the ASTM standard. Mechanical properties including axial and radial compression, density and friability index were also investigated. Moreover, efficiency tests were carried out. The test results showed that cassava rhizome 1 kg from tapioca chips factory with particle size of 10 mm and binder ratio of 0.1: 0.9 was the best coal briquette in terms of fuel and mechanical properties having heating value of 6,281.08 cal/g. The coal briquettes could stand for 4.17 kg/cm$^2$ for compression test. It was found its efficiency was in 33.11%. Regarding cost analysis, factory construction including machines and operating cost were about 202,000 bath and 0.50 bath/unit respectively. With production of 587,520 units/year and selling price at 8 bath/kg, the payback period was 1 year and 10 months. For cassava rhizome from field having 2.30 million ton/year which is the most amount among 3 sources, it is recommended to produce coal briquette at 10 mm and binder ratio of 0.1: 0.9. Its heating value is about 5,479.01 cal/g and efficiency is in 28.68%. According to the study, there is high probability to use cassava rhizome coal briquette in order to replace wood charcoal and inspire, which are of the prime quality thai tapioca chips.

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