

# A Study of the Efficiency of Charcoal Briquettes from *Canarium Sabulatum* Guillaumin and *Xylia Xylocarpa*

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## Abstract

This research aims to produce charcoal briquettes from *Canarium Sabulatum* (*Canarium Sabulatum*: tapioca starch) at the ratio of 8:2 and from *Xylia Xylocarpa* at the ratio of 7:3 (*Xylia Xylocarpa*: tapioca starch). The method that is used in this research is a cold press process by using a screw extruder that is connected with a 3.5 horsepower electrical motor. The finished charcoal briquettes of this method are compared with another finished charcoal briquette that uses a different emulsifier by analyzing thermal energy, amount of ashes, density, burning time, and a pattern of charcoal crackle. The analysis helps to determine which ingredients are the best for producing the best charcoal briquettes.

The result found that the production of charcoal briquettes from *Canarium Sabulatum* and *Xylia Xylocarpa* in both ratios results in briquettes with smooth surface, is completely dry, and is firmly formed in a bar shape. The thermal energy analysis showed that the charcoal briquettes that were mixed at the ratio 8:2 has the maximum thermal energy at 25.917 MJ/kg and pass Thai Community Products Standards (TCPS 238/2547) which indicated that the thermal energy must not be less than 5,000 calories/ gram or 20.920 MJ/kg . The density is also calculated and it was found that the charcoal briquettes from *Xylia Xylocarpa* at the ratio 7:3 has the best density at 735.74 Kg /m<sup>3</sup>.. It is similar to a previous research that stated the density of charcoal briquettes must not be more than 0.8 g/cm<sup>3</sup> or 800 kg/cm<sup>3</sup>. In regard to the amount of ashes, it showed that the charcoal briquettes from *Canarium Sabulatum* and *Xylia Xylocarpa* in both recipes have more ashes than the previous research. The burning time showed that the charcoal briquettes from *Canarium Sabulatum* at the ratio of 8:2 has the most burning time which is 326 minutes and is similar to the previous research. The previous research stated that the burning time of the charcoals should last more than 60 minutes. The last analysis regarding the pattern of charcoal crackle showed that the charcoal briquettes from *Canarium Sabulatum* and *Xylia Xylocarpa* in both recipes have no crackle and good quality according to the Thai Community Products Standards (TCPS 238/2547).

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