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Molded Charcoal Prepared from Bark Charcoal and Wood Pyrolysis Tar

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Abstract: Bark chips of *Acacia mangium*, which are produced as wood waste by an Indonesian pulp factory, were carbonized to powdered charcoal at a temperature range between 300~400°C. The by-product, tar, was mixed with the powdered charcoal, molded, and formed into charcoal having uniform shape, sufficient strength, and constant ignition followed by stabilization and/or carbonization. The effects of the process-stabilization without carbonization and carbonizing temperatures-were also investigated from an environmental viewpoint, i.e., the conservation of energy. Only stabilization for 4 h or carbonization below 400°C without stabilization yielded sufficient hardness ; however, the faint odor of wood tar persisted. Stabilization followed by carbonization below 400°C or stabilization for 20 h without carbonization completely eliminated the odor with increasing hardness. The heating value of the molded charcoal that was carbonized at 600°C with or without stabilization was the highest, and its ignition temperature was also high. Despite a low heating value, the molded charcoal carbonized at 300°C without stabilization was considered to be suitable for ignition due to its lowest ignition temperature of 233°C. The molded charcoal, which was carbonized at 900°C after stabilization, was activated by steaming for 60 min at 900°C. The yield was 36 wt% and its

surface area was 615 m²/g, which is rather moderate as compared with that of the activated carbons obtained from wood waste.

Keywords: wood pyrolysis tar, charcoal, molding, bark chip, acacia

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