

***The Hardness and Wear Test Of Brake Pad Based On
Composite Teak Wood Sawdust Material
(Tectona Grandis) With Epoxy Resin
Comission guide (Aditya Wahyu Pratama, S.T., M.T.)***

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ABSTRACT

The braking system uses the frictional force of the brake pads with the disc brake to reduce or stop the vehicle, where the brake pads are made of asbestos material. Brake pads are made from asbestos material mixed with other components such as SiC and Mn or Co which are not friendly to the environment, and produce ammonia gas which is dangerous to human health and destructs the ecosystem. This research makes a more environmentally friendly composite brake pad by utilizing waste from teak sawdust with a mixture of epoxy resin with the composition of teak sawdust and epoxy resin respectively 60: 40%, 50: 50%, and 40: 60%. By testing the Shore D Durometer hardness, the average hardness value is 51.875 HD for the composition of 60: 40%, 61 HD for the composition of 50: 50%, 78.25 HD for the composition of 40: 60%, and 83 HD for the comparison brake pad. As well as ogoshi wear testing with a value of $9.78745 \times 10^{-5} \text{ mm}^3/\text{kg.m}$ for the 60:40% composition, $3.21266 \times 10^{-4} \text{ mm}^3/\text{kg.m}$ for the 50:50% composition, $1.51872 \times 10^{-4} \text{ mm}^3/\text{kg.m}$ for the 40:60% composition, and $5.09679 \times 10^{-5} \text{ mm}^3/\text{kg.m}$. It can be concluded that only the 40:60% composition is close to the hardness value of the market brake lining with a difference of 6.07% from the Indopart brake lining, and the 60:40% composition has a wear value close to the Indopart brake lining with a difference of 9.21%. In summary, although some specimens have higher hardness levels, it does not necessarily mean that they have more wear resistance.

Keywords: *Brake Pads, Composite, Teak Wood, Epoxy Resin, Hardness, Wear, Ogoshi.*