

***EXPERIMENTAL STUDY OF MAKING MOTORCYCLE BRAKE
PADS USING COMPOSITE MATERIALS OF PALM SHELL,
SEASHELL, AND BRASS (Cu-Zn) POWDER***

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ABSTRACT

This study aims to determine the effect of variations in the composition of palm shell (PS), blood clam shell (BCS), and brass powder (Cu-Zn) on the hardness and wear of non-asbestos composite brake pads. The composition variations used were variation a (40BCS-25PS), variation b (35BCS-30PS), variation c (30BCS-35PS), and variation d (25BCS-40PS). Composite testing was carried out using the Shore D hardness method ASTM D2240 and pin-on-disc wear type ASTM G99. The results showed that variation c produced the highest hardness value of 75.3 HD, while variation b had the best wear resistance with a specific wear rate of $8.21 \times 10^{-4} \text{ mm}^3/\text{N}\cdot\text{m}$. The research results indicate that variations in material composition affect the mechanical properties of composite brake pads. The highest hardness value was obtained in variation c at 75.3 HD, while the lowest hardness value was found in variation b at 66.8 HD. In the wear test, the lowest wear value was obtained in variation b at $8.21 \times 10^{-4} \text{ mm}^3/\text{N}\cdot\text{m}$ because the graphite content could reduce friction and slow down the wear rate, whereas the highest wear value was found in variation d at $4.45 \times 10^{-3} \text{ mm}^3/\text{N}\cdot\text{m}$ due to a less dense material structure and weaker interparticle bonding.

Keywords: Composite brake pads, palm shells, blood clam shells, brass powder, hardness, wear.