

INTISARI

Tujuan penelitian ini adalah: (1) Mengetahui laju keausan komposit berpenguat partikel arang bambu wulung bermatrik epoxy pada berbagai fraksi volume. (2) Mengetahui nilai koefisien gesek komposit berpenguat partikel arang bambu wulung bermatrik epoxy pada berbagai fraksi volume. (3) Mengetahui kekuatan impak komposit berpenguat partikel arang bambu wulung bermatrik epoxy pada berbagai fraksi volume.

Penelitian ini dilaksanakan di Laboratorium Ilmu Logam Program Studi Teknik Mesin, Fakultas Sains dan Teknologi, Universitas Sanata Dharma Yogyakarta. Sedangkan untuk pengujian keausan dilaksanakan di Laboratorium Bahan Teknik Jurusan Teknik Mesin, Universitas Gajah Mada Yogyakarta. Penelitian ini menggunakan partikel bambu wulung sebagai penguat pada komposit. Variasi fraksi volume penguat yang digunakan pada komposit adalah sebesar 25%, 35% dan 45%.

Berdasarkan hasil penelitian, dapat disimpulkan bahwa: (1) Laju keausan spesifik komposit partikel arang bambu wulung bermatrik epoxy yang memiliki angka keausan paling mendekati dengan angka keausan kampas rem pembanding adalah komposit dengan fraksi volume 45% sebesar $2,729 \times 10^{-8}$ mm²/kg. (2) Koefisien gesek komposit partikel arang bambu wulung yang paling tinggi adalah komposit dengan fraksi volume 25% sebesar 0,478. (3) Komposit partikel arang bambu yang memiliki tenaga patah rata-rata paling tinggi adalah komposit dengan fraksi volume 45% sebesar 0,25 joule. (4) Komposit partikel arang bambu wulung yang memiliki harga keuletan rata-rata paling besar adalah komposit dengan fraksi volume 35% sebesar 0,0032 joule/mm².

Kata kunci: komposit, komposit partikel, partikel arang, partikel arang bambu, resin epoxy, kampas rem.

ABSTRACT

The purpose of this research are : (1) to know wear rate of composite reinforced of wulung bamboo charcoal particles with epoxy matrix on various volume fractions. (2) to know the value of coefficient friction composite reinforced of wulung bamboo charcoal particles with epoxy matrix on various volume fractions. (3) to know impact strength of composite reinforced of wulung bamboo charcoal particles with epoxy matrix on various volume fractions.

This research was carried out in Metal Science Laboratory of Mechanical Engineering Study Program, Faculty of Science and Technology, Sanata Dharma University, Yogyakarta. For wear testing carried out in Materials Engineering Laboratory of Mechanical Engineering Study Program, Gadjah Mada University, Yogyakarta. This research use wulung bamboo particles as composite reinforced. Variations in the volume fraction of the reinforced used in composites are 25%, 35% and 45%.

Based on result of the research, it can be concluded that : (1) the specific wear rate of composite of wulung bamboo charcoal particles with epoxy matrix which has the closest to the wear rate of brake canvass is a composite with 45% of volume fraction which the value is $2,729 \times 10^{-8} \text{ mm}^2/\text{kg}$. (2) the highest value of coefficient friction of composite of wulung bamboo charcoal particles with epoxy matrix is composite with 25% of volume fraction which the value is 0.478. (3) composite of wulung bamboo charcoal particles which has the highest average breaking strength is composite with 45% of volume fraction that the value is 0.25 joules. (4) composite of wulung bamboo charcoal particles which has the highest average ductility value is composite with 35% of volume fraction which the value is $0.0032 \text{ joule/mm}^2$.

Keywords: composite, particle composite, charcoal particle, bamboo charcoal particle, epoxy resins, brake canvass.