

ABSTRAK

Penelitian tersebut didorong oleh kebutuhan akan material komposit yang ramah lingkungan serta penggunaan cangkang telur, kulit salak, dan limbah kaca. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh perbandingan serbuk cangkang telur, serbuk kulit salak dan serbuk limbah kaca dalam produksi kanvas rem serta mendapatkan perbandingan kandungan penguat yang paling optimal. Di sisi lain, ditemukan beberapa sifat bahan dasar kanvas rem (asbes) yang berbahaya sehingga harus diganti dengan bahan lain. Oleh karena itu, perlu dilakukan inovasi material komposit dengan bahan dasar alternatif pengganti asbes yang tidak berbahaya bagi kesehatan manusia dan ramah lingkungan. Penelitian ini dilakukan dengan cara uji eksperimental di Laboratorium Teknik Mesin Universitas Mercu Buana, melakukan uji koefisien gesek dan uji kekerasan sesuai dokumen acuan standar kanvas rem. Percobaan yang digunakan pada penelitian ini dilakukan dengan membagi benda uji kanvas rem menjadi 9 kombinasi spesimen dengan tekanan kompresi suhu ruangan 5.000 psi selama 45 menit dan sinterring pada suhu 110°C selama 45 menit. Kemudian dilakukan uji koefisien gesek dengan acuan SNI, dan uji kekerasan dengan acuan kekerasan kanvas rem.

Kata kunci: Pembuatan kanvas rem serbuk cangkang telur serbuk kulit salak serbuk limbah kaca



Characterization of Composite Material Reinforced with Eggshell Powder, Salacca Peel Powder, and Glass Waste as Alternative Brake Pad Materials

ABSTRACT

The research was driven by the need for environmentally friendly composite materials, using eggshell, salacca peel, and glass waste. The aim of this research was to determine the effect of the ratio of eggshell powder, salacca peel powder, and glass waste powder in brake pad production, as well as to obtain the optimal ratio of reinforcing content. On the other hand, several hazardous properties of the base material of brake pads (asbestos) were found, necessitating replacement with other materials. Therefore, innovation in composite materials with alternative asbestos-free base materials that are safe for human health and environmentally friendly is needed. This research was conducted through experimental testing at the Mechanical Engineering Laboratory of Mercu Buana University, conducting friction coefficient tests and hardness tests according to reference documents for brake pads. The experiments in this research were conducted by dividing the brake pad test specimens into 9 combinations, with a compressive pressure of 5,000 psi at room temperature for 45 minutes and sintering at a temperature of 110°C for 45 minutes. Then, friction coefficient tests were conducted according to the Indonesian National Standard (SNI), and hardness tests were conducted according to brake pad hardness standards.

Keywords: *Brake pad manufacturing, eggshell powder, salacca peel powder, glass waste powder.*

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