

ABSTRACT

Brake pads are vital parts of automobiles, where tribological and mechanical properties are prime concern. Usually, asbestos brake pads were used, which were replaced by copper-based in later years. As brake lining materials have evolved, synthetic friction composites were explored as alternatives. Recent works suggested that, natural composites were promising friction material. However, poor thermal conductivity and frictional stability have limited their applications. Surface treatment of fibers and addition of secondary fillers have improved their possibilities. Thus, hybridization of reinforcements has expanded their range of applications. The present article attempts to prosopis juliflora powder, eggshell powder and scallop shell powder aspects of brake pads and their testing with attention on natural composites. Their properties were studied to conform their ability to meet desired requirements. The article studies conducted in recent years on prosopis juliflora powder, eggshell powder and scallop shell powder materials properties related to brake pads. The future potential of natural components in the development of friction composite materials for automotive applications is highlighted. The composites were tested in accordance with ASTM standards, and the results were optimized. Based on the results, composite specimens were created and tested for validation. The Taguchi technique and ANOVA were used to obtain optimal parameters in the machining and wear parameters. This experimental and analysis were compared which shows that Prosopis juliflora, eggshell powder and scallop powder composite can be use as alternate material for brake pad to obtain better efficiency.

Keywords: scallop shell powder, egg shell powder, Prosopis juliflora, abrasive wear resistance, taguchi and anova, flexural, water absorption, natural composites.