

## Investigation of Effect of Mixture Ratio and Compaction Pressure of Reinforced with Miscanthus Fibre Brake Pad Samples

**Authors :** M. Unaldi, R. Kus

**Abstract :** Brake pads are important parts of the braking system and they are made of different materials. Use of asbestos fibre can cause health risks. The goal of this study is to determine the effect of ecological brake pad samples which are produced under different compaction pressure values and mixture ratios by using miscanthus as reinforcement component on the density, hardness, wear rate and compression strength properties, and friction coefficients changes of ecological brake pad samples. Miscanthus powder, cashew powder, alumina powder, phenolic resin powder, and calcite powder mixtures were used to produce ecological brake pad samples. The physical properties of the brake pad samples produced under different mixture ratios and compaction pressures values were determined to assign their effects on them by using Taguchi experimental design. Mixture ratios and compaction pressures values were chosen as the factors with three-levels. Experiments are conducted to  $L_9(3^4)$  Taguchi orthogonal array design. The results showed that hardness value is very much affected both compaction pressure values and mixture ratios than the other physical properties. When reinforcing component ratio within the mixture and compaction pressure value is increased, hardness and compression strength values of the all samples are also increased. All test results taking into account, the ideal compaction value for used components and mixture ratios were determined as 200 MPa.

**Keywords :** brake pad, eco-friendly materials, hardness, Miscanthus, Taguchi method

**Conference Title :** ICAME 2016 : International Conference on Automotive and Mechanical Engineering

**Conference Location :** San Francisco, United States

**Conference Dates :** September 26-27, 2016