## Effect of Variation in Particles Size of Hemp, Brass, Aluminium Fibre Blends in the Manufacture of Polymer-Based Brake Pads on Braking System Performance

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## ABSTRACT

The brake is a very important component of a motor vehicle and helps reduce the vehicle's kinetic energy and slow down or stop its movement. The friction materials of brake pads consist of three components: binding materials, fiber materials, and filler materials. The binding materials include various resins such as phenolic, formaldehyde, epoxy, polyester silicone, and rubber. The research method used in this study is the experimental method. The experimental method is a technique used to compare a test of varying material compositions as a comparison. The experiment conducted in this study is the effect of hemp fiber with variations of mesh 50, 60, and 70 of brass and aluminum. The results of the friction coefficient testing showed values of 0.166 for specimen 1, 0.168 for specimen 2, and 0.170 for specimen 3. Testing the results of the wear rate of some specimens 1, 2 and 3 at RPM 3500, the highest wear rate in specimen 1 which is worth 9.73 x 10-9, in specimen 2 which is worth 6.35 x 10-9, in specimen 3 which is worth 4.65 x 10-9. Testing the results of the wear rate of specimens 1, 2 and 3 at RPM 4000 is 8.04 x 10-9 in specimen 1, 3.81 x 10-9 in specimen 2, 2.96 x 10-9 in specimen 3. Testing the wear rate at RPM 4500 got the results of 5.92 x 10-9 in specimen 1, 2.54 x 10-9 in specimen 2 and 2.11 x 10-9 in specimen 3. The mesh size of a brake lining material can affect the hardness of the brake lining, the surface roughness of the brake lining and its temperature. The rougher the surface, the greater the coefficient of friction obtained, the larger the mesh size, the smaller the wear rate obtained.

Key words: brake lining, thermoinfrared, braking