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Manufacturing of Brake Pad Using Aluminium Silicon Carbide Reinforced with Alumina for Automobile Industry

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Abstract

The brake pad plays an integral part in the automobile industry by controlling cars' motion and making them safe to drive. The brake pad ensures the safety and longevity of the vehicle. In the last century, we have seen great strides in finding materials that best perform thermal conductivity, compressive strength and wear-resistant. The continual search for new composites with improved properties to substitute for the composites commonly used for the brake pad necessitated this work. This research involves reinforcing aluminium metal with

small grits sizes of silicon carbide. Subsequently, the additions of alumina, zinc and calcium through mechanical stir casting were adopted to produce the samples. The samples were further tested and analysed on those particular properties. The results illustrate that the wear resistance and thermal conductivity were similar to those from the controlled specimen. The composite with 70%wt of aluminium, 20%wt of SiC and 10%wt of Al₂O₃ is recommended as a substitute for the conventional brake pad. It has thermal conductivity of 93.3 W/m.K, wear resistance of 43.22 cm³/cm and a compressive strength of 1343.3 MPa against 101.2 W/m.K, 8.10 cm³/cm and 1220.4 MPa, respectively, for the control sample.

Keywords

- **Aluminium**
- **Silicon carbide**
- **Alumina**
- **Stir casting**
- **Zinc**
- **Calcium**
- **Brake pad**
- **Composites**

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