

# Review on Development and Mechanical Testing of Eco-Friendly Bio-Composite Brake Pad

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**Abstract:** *The increasing demand for sustainable automotive components has driven research into eco-friendly brake pads as alternatives to conventional asbestos-based pads, which pose environmental and health risks. This project focuses on the development and mechanical testing of a bio-composite brake pad, utilizing natural fibers, biodegradable binders, and friction modifiers to achieve efficient braking performance while ensuring sustainability. The selected materials offer high thermal stability, wear resistance, and mechanical strength to withstand braking forces and extreme temperatures.*

*The manufacturing process involves material selection, mixing, compression molding, and post-curing treatment. To evaluate the brake pad's performance, mechanical and tribological tests are conducted, including hardness, density, compressive strength, friction coefficient, and wear rate analysis. A pin-on-disc test is performed to simulate real-world braking conditions, and the results are compared with conventional brake pads. Additionally, thermal degradation analysis and environmental impact assessments validate its sustainability and durability..*

**Keywords:** automotive components