

Experimental Investigation of Brake Pads using Composite Materials

Prof. M.B. Gore¹, Jeevan Pote², Shubham Pangare³, Sahik Karche⁴, Devansh Chimankar⁵

Lecturer, Department of Mechanical Engineering¹

Students, Department of Mechanical Engineering^{2,3,4,5}

Zeal Polytechnic, Pune, Maharashtra, India

Abstract: *This research focuses on identifying the ideal material composition to achieve the best balance of hardness and wear resistance. The experimental approach involved utilizing a specialized test bed to evaluate the mechanical properties of different material formulations. During the tests, material specimens were carefully weighed both before and after the testing process to calculate the wear rate by measuring the change in mass. The experimental results revealed that a 50:50 composition outperformed the 60:40 composition in terms of hardness and wear resistance. This superior performance indicates that the 50:50 composition offers a better balance of strength and durability, making it more suitable for applications that require both properties. These findings are particularly significant for industries like manufacturing, materials engineering, and automotive production, where material performance directly impacts the efficiency and longevity of the final products. By highlighting the advantages of the 50:50 composition, this study contributes valuable insights into the material selection process, enabling engineers and designers to make informed decisions that improve the overall performance of their applications.*

Keywords: Material composition, Hardness, Wear resistance, 50:50 composition, 60:40 composition, Experimental approach, Test bed, Wear rate measurement, Mass change, Mechanical properties, Material performance, Manufacturing, Materials engineering, Automotive production, Durability, Strength and durability