

PERFORMANCE COMPARISON BETWEEN
BORON AND ALUMINA BRAKE PAD

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**PERFORMANCE COMPARISON BETWEEN
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DEDICATED TO

My beloved

Wife: Shayuti Mohamed Adnan

Son: AmirulMukminin

Daughter: AmirahMardiah

Thanks for all your assistance, support and understanding

H

An abstract of the thesis presented to the Senate of University Malaysia Terengganu in partial fulfilment of the requirements for the degree Master of Science

**PERFORMANCE COMPARISON BETWEEN BORON AND ALUMINA
BRAKE PAD**

MOHD NIZAM BIN YUSOFF

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This study proposed Boron as an alternative to Alumina in the brake pad composition. Specifically, it examined effects of Boron on the brake pad performances including friction coefficient, wear resistance, hardness, porosity and specific gravity at four different levels which are 0.6wt%B, 1.0wt%B, 1.5wt%B and 2.0wt%B. The performance of Boron mixed brake pads, in addition to their wear characteristics were also compared with the conventional brake pad consisting Alumina (**Al₂O₃**) respectively using scanning electron microscope (SEM) and surface roughness machine. A total of 20 samples were prepared to perform friction and wear test, 25 samples for hardness, porosity and specific gravity test respectively and 15 samples prepared for surface roughness test. It was found that friction coefficient of Boron mixed brake pads and commercial brake pad were significantly different during the CHASE test. Thickness loss for commercial brake pad sample was the highest compared to all Boron mixed brake pads. Thickness loss for the latter generally reduced with the increase in Boron content, with ZMF+B1.5% showed the best wear resistance. In summary, ZMF+B1.5% is considered as the best formulation among all formulations for its high friction coefficient value, low thickness loss, high hardness, constant porosity and specific gravity value.