FINAL YEAR PROJECT REPORT

ADVANCE DIPLOMA IN MECHANICAL ENGINEERING

SCHOOL OF ENGINEERING

INSTITUT TEKNOLOGI MARA

SHAH ALAM

STUDY OF ALUMINIUM-TIN ALLOYS

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ABSTRACT

This project is concerned with the investigations leading to metallurgycal properties of aluminium-tin alloys specifically to meet requirements of bearing in automotive industry such as crankshaft journal bearing and shock absorber piston rod guide bush both hydrodynamically lubricated or normal lubricated applied.

Within the scope of this project the investigation will focus on the metallurgical properties aluminium-tin alloys, effect of alloying elements and improvement of the tin distribution through alloying. It is apparent the matrix properties and the tin distribution and the size of tin network is deciding the bearing properties is applied.

Tin alloy bearing are suitable for many automotive applications mainly due to the excellent bearing properties of the metal tin. However the tin being a soft metal therefore tin need a carrier metal for supporting. The carrier metal should not alloy with tin in any way and

reduce the bearing effect of tin. As such the choice of aluminium is obvious due to the total immiscibility of aluminium in tin or tin in aluminium. So aluminium becomes a carrier metal for a well distributed tin network.

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