Enhancement of Mechanical Properties in the Heat Affected Zone of AA 5083 Weld Joints

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DECLARATION

I certify that the Thesis with the title " **Enhancement of Mechanical Properties in the Heat Affected Zone of AA 5083 Weld Joints** " is entirely my own work. It has not been accepted for any degree and it is not being submitted for any other degree.

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ABSTRACT

Decline of Mechanical properties were observed at the Heat Affected Zone (HAZ) of the Gas Metallic Arc Weld (GMAW) joints of the Aluminium Alloy (AA) 5083. It was concerned as a direct effect of the weld thermal cycle on the work hardened material. Experimental efforts were aimed to set up a post welding procedure to recover this decline of properties. Presence of the Silicon in AA 5083 was significant in the experimental considerations due to its tendency of forming Mg_2Si precipitates at intensified temperatures. A series of mechanical and microstructure observations were done to evaluate the effectiveness of the post weld heat treatment, with the AA 5083. According to the experimental results heat treatment at 473K for 10 minutes produced the most effective improvement of mechanical properties at the HAZ of weld joint.

CONTENT

LIST OF FIGURES AND TABLES

Figures

Tables