AN OPTIMIZATION OF MECHANICAL PROPERTIES OF FRICTION STIR WELDED DISSIMILAR MATERIALS WITH DIFFERENT PREHEATING CONDITIONS

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ABSTRACT

The aim of this work is to optimization of the mechanical properties of friction stir welded dissimilar materials with different preheating temperature. A series of joints were made on 04 mm thick Aluminum7xxx and Mild-Steel plates. The temperature used to be 100°C, 150 °C and 200 °C. The welding operation performed with different rotational speeds and traverse speed (1000, 1400 and 2000 ramp and 16, 20 and 25 mm/min) the mechanical properties were measured with respect to tensile strength, impact strength and hardness. The physical properties were examined based on the microstructure using optical microscope. The results show that weld with 150 °C, 16 mm/min and 1400 rpm parameter exhibit the better joint strength of 130.36 MPa.

KEYWORDS: Preheating Temperature, Friction Stir Welding, Mechanical Properties & Microstructure

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