DIFFUSION BONDING OF ALUMINIUM TO MILD STEEL ACTIVATED BY FSW

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ABSTRACT

This paper aims to present a study performed to produce lap joints of AA 1050-O over mild steel taking advantage of diffusion mechanisms induced by FSW. The pin length was set to fully process the aluminium plate, while slightly penetrating the steel. Influence of process parameters (axial load, rotation and travel speeds) on joining interface characteristics was studied. The diffusion layer was evaluated by Scanning Electron Microscopy (SEM) and Energy Dispersive Spectroscopy (EDS). An efficient defect-free bonding interface was produced extending beyond the region directly processed by the pin diameter. A diffusion layer with 8-10 µm thickness was observed.

KEY WORDS: Friction stir welding, AA 1050-O, mild steel, dissimilar joining, diffusion bonding.

REFERENCES