

The Effect of Heat Treatment on Weld Strength of Al-Steel Joints with Different Thicknesses

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Abstract

In the present study the effect of heat treatment on bond strength and intermetallic formation in dissimilar Aluminum-steel joints was investigated. Whereas the softer metal (Aluminum) was thinner, all samples were fractured from weld zone. Therefore, it was possible to evaluate the bond strength of the welds even when the bond strength of the weld exceeded the base material. It was observed that as welded sheets have the bond strength equivalent to the base material and the toughness were so low. After heat treatment for 1 hour, the bond strength and elongation increased considerably but thereafter increased time of heat treatment led to degradation of weld strength and elongation.

Keywords: friction stir welding, heat treatment, intermetallic, bond strength

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