

Structural morphology of Al-Mg-Si alloy friction stir welds through tool eccentricity

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ABSTRACT

In this work, the microstructure development in the stir zone of Al-Mg-Si alloy is evaluated while employing tool eccentricity during friction stir welding. Low dislocation density with dispersoids were observed in the inner band region of the stir zone produced with aligned tooling. On the other hand, a high dislocation density with Mg₂Si precipitates can be observed in the same region of the stir zone when a tool eccentricity of 0.2 mm was utilized. The discrepancy is attributed to the enhanced shearing activity imposed on the material during the welding process.

KEYWORDS

Friction stir welding; Aluminum; Tool eccentricity; Dislocation; Precipitates; Aluminum alloy

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