

Friction Stir Welding, Processing, and Additive Manufacturing of Aluminum alloys and Composites

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The Friction stir (FS) technique is a contemporary solid-state processing method that employs thermo-mechanical processes to create unique microstructure features. FS endows exceptional mechanical properties, surpassing those of conventional processing techniques. The present study accentuates the FS welding of thick-section non-heat-treatable aluminum alloys, employing a range of processing conditions. Further, the study expounds upon the FS processing of aluminum alloy composites, manifesting multifunctional characteristics. Finally, the research investigates the influence of feed-stock lubrication on the mechanical properties of samples produced via FS additive manufacturing.

Keywords: Friction stir-welding, processing, additive manufacturing, Aluminum alloys, Composite.