

The Joint Properties for Friction Stir Welding of Aluminium Tubes

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Abstract : Friction Stir Welding (FSW), a solid state joining technique, is widely being used for joining Al alloys for aerospace, marine automotive and many other applications of commercial importance. FSW were carried out using a vertical milling machine on Al 5083 alloy pipe. These pipe sections are relatively small in diameter, 5mm, and relatively thin walled, 2mm. In this study, 5083 aluminum alloy pipe were welded as similar alloy joints using (FSW) process in order to investigate mechanical and microstructural properties .rotation speed 1400 r.p.m and weld speed 10,40,70 mm/min. In order to investigate the effect of welding speeds on mechanical properties, metallographic and mechanical tests were carried out on the welded areas. Vickers hardness profile and tensile tests of the joints as a metallurgical investigation, Optic Microscopy and Scanning Electron Microscopy (SEM) were used for base and weld zones.

Keywords : friction stir welding (FSW), Al alloys, mechanical properties, microstructure

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