

Experimental Study of the Ultrasonic Welding Effected Crack Propagation

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Ultrasonic welding is a special joining process. The joint between the metal sheets established by a complex effect. These effects are the ultrasound, the plastic deformation and the friction established heating [1]. The ultrasound effect in the solid metals modify the dislocation density. The mechanical properties and also the crack initiation and propagation depend on the metal mechanical properties and even the dislocation movements and density [2]. The author wanted to find relationship between the ultrasonic welding effected dislocation density and the crack propagation. It was tested the welded thin aluminium sheet mechanical properties and the cracking dependence on the welding parameters. Also tested the dislocation density and the hardness of the joint and the heat affected zone (HAZ) of the joint as a function on the welding process parameters.

Keywords: ultrasonic welding, dislocation, HAZ, hardness, crack propagation

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