

Etude de la soudabilité de l'alliage d'aluminium 7075 soudé par le procédé de soudage par point par friction malaxage FSSW

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Abstract: The welding of metal structures and constructions in various industrial sectors is tending towards the intensive use of modernized welding processes such as FSSW. In order to reduce the weight of metallic devices and structures, the replacement of riveting by welding is considered in the current research. In the present work, the interest will be focused on the study of this process. Sheets in AA7075-T6 are welded using different speeds of rotation and depth of penetration, we have used several simple but effective analytical methods suitable for this type of research, such as mechanical tests, such as tensile tests and hardness tests, to determine the best properties for a good weld that can maintain the mechanical properties of the base materials. We also conducted a microscopic study to detect the different zones in welding position, and we reached zones, which are ZM ZAT ZATM. These zones result from the heat generated by the friction that occurs between the welding tool and the aluminum plates. We show that increasing the speed of rotation and the depth of penetration of pawn increases the resistance of the weld joint. So we obtain a tensile force equal to 2.03 kN at a speed of 1800 rpm and a penetration value of 3.4

Keywords : ZM ZAT ZATM, welding of metal structures, FSSW, AA7075-T6