

FRICTION STIR WELDING

INDEPENDENT STUDY

ABSTRACT

Conventional fusion welding process is not suitable to join the material like aluminum which has low melting point. Some aluminum alloys can be resistance welded, but the surface preparation is extensive, with surface oxide being a major problem. A serious problem with fusion welding, even when a sound weld can be made, is the complete alteration of microstructure and the attendant loss of mechanical properties. In order to mitigate these problems, new joining technology “Friction stir welding” process was developed at The Welding Institute (TWI).

In this independent research, the study was mainly concentrated on the Friction stir welding. In this study, friction stir welding process has been discussed as well as the classification of the microstructure. Tensile strength, hardness and fatigue properties of the joint also explained in this report which is mainly based on review of journals, and the online materials. It was found that mechanical properties of the joints are significantly affected by the welding parameter, such as welding speed and the rotation speed. The optimum FSW parameter can be determined from the relations between tensile properties and the welding parameters, and the maximum tensile strength of the joints is equivalent to 80% of that of base material.