Tensile Properties of AA6156-T4 Friction Stir Welded Joints in As-Welded and Post-Weld Aged Condition

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The effect of the T62 post-weld heat treatment on the tensile strength of AA6156-T4 friction stir welded joints is studied. To this aim, the 0.2% proof stress and the tensile strength of as-welded and post-weld treated joints as function of the rotating and welding speed was analyzed performing a complete factorial design with three levels for each studied parameter. Statistical analyses were carried out to establish empirical models of the tensile properties of the joints as a function of the studied welding parameters. The obtained models were validated through statistical tools such as Mallow's *CP*, *S*, R^2 and $R^2(adj)$. The developed regression models can be effectively used to predict the mechanical proprieties of the joints at 95% confidence level.

Keywords: friction stir welding, AA6156, DOE, ANOVA, tensile properties

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