



## Friction Stir Processing of Al 6061-6063 Aluminum alloy

By Rahul B. Dhabale

LAP Lambert Academic Publishing Jun 2017, 2017. Taschenbuch. Condition: Neu. Neuware - Subject of this book is the effect of welding process parameters on the mechanical properties of aluminum alloy Al 6061 and Al 6063 using friction stir welding (FSW). Different friction stir welded specimens were produced by employing variable welding speed and tool rotation speed. Al 6061 and Al 6063 aluminum alloy plates were welded using a taper shaped pin tool made of high carbon high chromium (HCHCr) D2 tool steel. Ultimate tensile strength, hardness and bending tests were performed to evaluate the welding strength at the joints. Experiments were carried out as per Taguchi's orthogonal L9 array. Taguchi's signal to noise ratio and analysis of variance methods are used to find out the most significant parameter. From the statistical analysis it was found that spindle speed is the significant process parameter. Also developed empirical model using multiple (linear and nonlinear) regressions modeling method. Finally, genetic algorithm has been employed to find out the optimal setting of process parameters that optimize performance measures. MATLAB coding was used to develop the nonlinear model. MATLAB optimization tool box was used to optimize the process parameter. 52 pp. Englisch.

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