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# Optimal Parameter Design by Taguchi Method for Mechanical Properties of Al6061 Hybrid Composite Reinforced With Fly Ash/Graphite/Copper

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**Abstract:** The present examination has been centered on the use of fly ash, graphite and copper in a valuable way by scattering it into aluminium alloy Al6061 to produce a composite by stir casting technique. An attempt has been made to study for optimizing the percentage composition of aluminium alloy Al6061 reinforced with fly ash, graphite and copper utilizing Taguchi's orthogonal array. The mechanical properties studied are the tensile strength, hardness and impact strength. Taguchi's  $L_4(2^3)$  orthogonal array is used to plan the experimentation, in this way four compositions of aluminium matrix composite are produced and the samples are prepared for testing. The experimental results showed significant changes in each composition. Both the tensile strength and hardness tend to increase when compared to unreinforced Al6061. A mathematical model representing the tensile strength is developed using regression analysis with the help of MINITAB software.

**Keywords :** Al6061, fly ash, graphite, copper, Taguchi, regression equation, MINITAB.

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