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# Influence of Stir Casting Process Parameters on Properties of Aluminium Composites

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**Abstract:**The need of advanced engineering materials for various engineering applications goes on increasing. The global need for materials ranges from reduced weight, low cost, quality and high performance in different environmental conditions. To meet the demands and requirements for advanced materials, metal matrix composite is one of the best solutions. In this paper, an attempt has been made to investigate properties of the unreinforced Aluminium Die Casting-12 (ADC-12) and hybrid aluminium metal matrix composite with the hard ceramic (10% wt. of SiC). Aluminium metal matrix composite (AMC) is fabricated using stir casting process by varying process parameters like stirring speed, stirring time and process temperature. The compressive strength and wear resistance tests were conducted to examine the behaviour of the aluminium alloy and its composites. Taguchi's approach along with Principal Component Analysis is used to find out the most significant process parameter which affects the required properties of the composite. From the experimental results, it is evident that compressive strength and wear resistance increases with increasing processing temperature and decrease with increasing stirring speed and stirring time.

**Keywords :**Aluminium metal matrix composite, compression strength, wear resistance, stir casting, principal component analysis.

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