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Influence of Particle Size on the Mechanical Properties of Al8011-SIC Composites-Taguchi Approach

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Abstract: Al 8011-SiC composites were produced with reinforcement of three different particle sizes of SiC(63,76,and 89ìm)and with different weight fractions (2, 4, and 6%) by the stir casting method. The mechanical properties of the Al8011-SiC composites due to the effect of particle size and different weight fraction of SiC is reported in this paper. Anova (Analysis of variance) and Taguchi method were used to find the optimum parameters for attaining the maximum mechanical properties such as hardness, tensile strength, elongation and toughness of the composites and the results were endorsed by confirmation test. From the result it is observed that with the decrease in particle size and increase in weight fraction of SiC the mechanical properties of the composites increased. Fine particles of SiC (63ìm) exhibit superior hardness, tensile strength, elongation and toughness than the intermediate (76ìm) and coarse particles (89ìm). Al 8011-6wt. %SiC exhibit superior hardness and tensile strength and Al8011-2wt.%SiC exhibit superior elongation and toughness of the composites. Particle size is the most prevailing factor followed by the amount of reinforcement inducing mechanical properties of the composites.
Keywords:mechanical, parameter, stir casting, Taguchi, Anova, optimum**.**

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