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Characterization Study of Aluminium 6061 Hybrid Composite

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Abstract : Aluminium matrix composites with alumina reinforcements give superior mechanical & physical properties. Their applications in several fields like automobile, aerospace, defense, sports, electronics, bio-medical and other industrial purposes are becoming essential for the last several decades. In the present work, fabrication of hybrid composite was done by Stir casting technique using Al 6061 as a matrix with alumina and silicon carbide (SiC) as reinforcement materials. The weight percentage of alumina is varied from 2 to 4% and the silicon carbide weight percentage is maintained constant at 2%. Hardness and wear tests are performed in the as cast and heat treated conditions. Age hardening treatment was performed on the specimen with solutionizing at 550°C, aging at two temperatures (150 and 200°C) for different time durations. Hardness distribution curves are drawn and peak hardness values are recorded. Hardness increase was very sensitive with respect to the decrease in aging temperature. There was an improvement in wear resistance of the peak aged material when aged at lower temperature. Also increase in weight percent of alumina, increases wear resistance at lower temperature but opposite behavior was seen when aged at higher temperature.

Keywords : hybrid composite, hardness test, wear test, heat treatment, pin on disc wear testing machine
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