



## **Comparative Study of Mechanical and Tribological Properties of Aluminium with Silicon Carbide and Aluminium with Alumina Composites Produced By Powder Metallurgy**

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**Abstract :** Aluminium alloys have been gaining greater importance as structural materials, but for many applications it is necessary to improve their wear resistance. In particularly, uses of Aluminium alloys in automotive applications has been limited due to their inferior strength, rigidity and wear resistance, as compared as of ferrous alloys. Particle reinforced Aluminium composites; nevertheless, offers reduced mass, high stiffness and strength and improved wear resistance.

Recently, particle reinforced Aluminium composites are made especially with the reinforcement of Aluminium (Al) with silicon carbide (SiC) and Alumina ( $Al_2O_3$ ) i.e. mainly with the process of powder metallurgy. The powder metallurgy method has better matrix-particle bonding, easier control of matrix structure, uniform dispersion of the reinforcement and low manufacturing temperature compared with other MMCs production methods. The present investigation is focused on the comparative study of Aluminium (Al) based metal matrix composites with the addition of  $Al_2O_3$  and SiC are manufactured with the help of Powder metallurgy method.

The effects of ceramic reinforcement  $Al_2O_3$  and SiC in Al have been analyzed with tribological and mechanical properties. The interaction of SiC with Al shows the better results in terms of wear behaviour and hardness than the individual Al. From the comparative analysis, Al with SiC composites improves the strength, hardness and showed reduced wear loss than Al with the reinforcement of  $Al_2O_3$ .

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