

# Mechanical Characterizations of Al7075 alloy Reinforced with SiC Metal Matrix Composites

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**Abstract:** The stir-casting method offers an efficient approach to produce higher-grade metal matrix composites (MMCs) using Al composites. Among the various methods available, stir-casting is frequently employed. This study focuses on the formation of Al7075/SiC MMCs, incorporating different weight percentages of SiC (2%, 4%, 6%, and 8%). The microstructures clearly revealed the uniform distribution of SiC particles in the Al matrix. A pin-on-disk tester was used to perform a dry sliding wear test at different loads and sliding speeds. In comparison to the Al matrix, the composite materials showed improved wear resistance. Furthermore, in the entire applied loads and sliding velocities, the wear rate decreased with the increase in SiC content. The composites displayed lower wear rates due to their high hardness and strong interfacial bonding between the in-situ reinforcement and the matrix alloy

**Keywords:** Al7075 alloy; SiC; Metal Matrix composites; Microstructure; Wear analysis.

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