

Thermal investigation of aluminium - 11.8% silicon (LM6) reinforced SiO₂ – particles

ABSTRACT

High performance automotive, aerospace, electronics and other industrial and commercial applications are finding tremendous advantages in using metal matrix composites. The reinforcement is very important because it determines the mechanical properties, cost and performance of a given composite. An excellent in mechanical properties, combined with the ease of formability and low cost makes the application of metal matrix composite of aluminium-11.8% silicon reinforced SiO₂ to increase steadily. This paper investigates the interrelationships between thermal properties and reinforcement content, microstructure and hardness of LM6 reinforced SiO₂ composites. Specimens were fabricated by casting technique for 5, 10, 15 and 20% weight fractions of SiO₂ particulate and mesh of: 65 micron. The experimental results show that the thermal diffusivity and thermal conductivity decreases as SiO₂ wt.% of the composite increases and under hardness test, it was found that the hardness value had increased gradually with the increased addition of quartz particulate by weight fraction percentage.

Keyword: Composite materials; Hardness test; Metal matrix composites; Thermal investigation