

The Effect of Particulate Reinforcement Addition to Latent Heat and Solid Fraction During Solidification of Titanium Carbide Particulates Reinforced Aluminium Alloy Matrix Composite Produced by Vortex Mixing-Sand Casting Technique

ABSTRACT

In this study the effect of particulate reinforcement addition to latent heat generation and solid fraction during solidification of metal matrix composite is investigated. Vortex mixing - sand casting technique is employed to produce the specimens. Solidification data during the casting process is acquired and studied using Fourier thermal analysis (FTA) to calculate the latent heat generation and solid fraction. In this study latent heat and fraction solid are obtained by performing calculations based on FTA. The results show that when volume fraction of particulate reinforcement is increased, the fraction solid rate is faster and the latent heat generation during solidification decreased. It is concluded that as more particulate reinforcement is added, it promotes faster solidification during the casting process.

Keyword: Metal matrix composite, Fourier thermal analysis, Latent heat, Solid fraction