

Influence of mechanical vibration moulding process on the tensile properties of TiC reinforced LM6 alloy composite castings

ABSTRACT

Vibrational moulding process has a remarkable effect on the properties of castings during solidification processing of metals, alloys, and composites. This research paper discusses on the investigation of mechanical vibration mould effects on the tensile properties of titanium carbide particulate reinforced LM6 aluminium alloy composites processed with the frequencies of 10.2 Hz, 12 Hz and 14 Hz. In this experimental work, titanium carbide particulate reinforced LM6 composites were fabricated by carbon dioxide sand moulding process. The quantities of titanium carbide particulate added as reinforcement in the LM6 alloy matrix were varied from 0.2% to 2% by weight fraction. Samples taken from the castings and tensile tests were conducted to determine the tensile strength and modulus of elasticity. The results showed that tensile strength of the composites increased with an increase in the frequency of vibration and increasing titanium carbide particulate reinforcement in the LM6 alloy matrix.

Keyword: Mechanical vibration moulding process; TiC particulate; LM6 alloy; Metal matrix composite; Tensile properties; Modulus of elasticity