PROCESSING AND CHARACTERIZATION OF AA2618/SiCp METAL MATRIX COMPOSITES BY STIR CASTING METHOD

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Abstract

The future performance requirements of aero-engines must have improved thrust to weight ratios, reduced SFC and reduced signatures. Current materials technology within aero engines will restrict the thermodynamic cycle improvements and thus new materials and manufacturing techniques must be developed if the predicted improvements in engine performance will be due to material technology. The potential of metal matrix composite (MMC) materials for significant improvement in performance over conventional alloys have been recognized widely. However, their manufacturing costs are still relatively high. A critical step in the processing of cast particle reinforced MMCs is the incorporation of the ceramic particles into the molten matrix alloy. Therefore, wettability of the reinforcement particle by the matrix alloy must be optimized even though some of the methods are expensive and complex and some are cheap and simple technique. In order to produce 2618/SiCp MMC with maximum yield, two types of mixing i.e. liquid state and semi-solid state mixings have been introduced in the stir casting process with the support of process parameters from literatures. The process parameters utilized in each trial and results obtained in these processes are also highlighted. The density, hardness and tensile properties obtained in both the mixing processes are discussed. The study is carried out to assess the behaviour of AA2618/SiCp MMC for the fabrication of compressor blade.

Key words: *Metal matrix composites, Tensile tests, High-cycle fatigue, AA 2618, SiCpIn*

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