FLUIDITY AND CASTABILITY STUDIES ON Al-SiCp COMPOSITES

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ABSTRACT

Al-Si-SiC particulate reinforced metal matrix composites are gaining wide acceptance in automotive and aircraft industries. Components made out of these composites are mainly produced through casting method, because it is an easy and economical method compared to other fabrication method. To produce sound castings with uniform dispersion of particles, it is necessary to learn more about the casting factors and their characteristics. The critical casting factors that influence the castings are the fluidity and castability. In the present investigation, the fluidity and castability studies have been carried out for high silicon (9,15,20,25 wt%) added Duralcan composites by gravity casting and low pressure casting (LPC) methods, using standard spiral sand mould and metal moulds. It has been found that in both the gravity casting and low pressure casting methods, the fluidity and the castability are found to increase with the silicon level present in the composites. The castability of the composite is found to increase linearly with increase in temperature for the range of temperature studied (730, 740, 760°C). Increase in castability with the filling rate (6mm/sec, 12mm/sec, 18mm/sec) is noticed during LP casting using strip moulds used for castability studies. With increasing the thickness of
strip castings, the castability is found to increase by gravity casting and Low Pressure Casting methods. More details on these studies will be reported in the paper.