

CASTING OF AL-SiC_p COMPOSITES AND TESTING OF THEIR PROPERTIES

RAJESH PUROHIT¹ & C. S. VERMA²

¹Mechanical Engineering Department,

Maulana Azad National Institute of Technology, Bhopal-462051 India..

²Mechanical Engineering Department, IIT Delhi, Delhi.

ABSTRACT

Al-SiC_p composites with 5, 10, 15, 20, 25 and 30 weight % of SiC_p in the shape of solid cylindrical pins were fabricated using stir die casting process. The various properties viz. density, hardness, compressive strength, tensile strength, surface roughness and wear resistance were measured. The density, hardness, compressive strength and tensile strength of Al-SiC_p composites were found to increase with increase in the weight % of SiC_p from 5 to 30 weight percent. The wear resistance of Al-SiC_p composite pins was studied using a pin on disc wear testing machine under dry as well as lubricated conditions. The wear tests revealed that the wear resistance of Al-SiC_p composites increases with increase in reinforcement content from 10 to 20 weight % of SiC_p while the wear resistance decreases on further increase in reinforcement content from 20 to 30 weight % of SiC_p. The coefficient of friction was also monitored during the wear tests. The microstructure of polished and etched surfaces of cast Al-SiC_p composite samples were studied using scanning electron microscopy.

KEY WORDS: Metal matrix composite, cast Al-SiC_p composite, stir casting, induction furnace, mechanical testing, wear resistance, scanning electron microscopy.