

EFFECT OF AGING ON WEAR BEHAVIOR OF AL-MG-SiC COMPOSITE

AJIT BEHERA & S. C. MISHRA

Department of Metallurgical and Materials Engineering, National Institute of Technology, Rourkela, India

ABSTRACT

The Purpose of this work is to study about the wear behavior and aging characteristics of as cast Aluminium-Magnesium-Silicon carbide composite. The Al-Mg-Si carbide alloy block is prepared in an induction heating furnace. Wear behavior of these samples was studied by conducting several wear tests on pin on-disc wear test machine by varying time, applied load, sliding speed and sliding distance. The microstructures of the damaged/worn samples and the crack morphology of the surfaces were studied using Stereoscope. Pin-on-disc wear analysis indicated that Al matrix with Mg and SiC increased the wear resistance. Profilometre studies were done to study the surface roughness. Then five samples were sliced from the main sample for the aging treatment. The composite was solution treated at a temperature of 250 °C for 1hr and then aged at four different temperatures viz. 120 °C, 150 °C, 180 °C, and 220 °C to study the aging behavior of the composite. The micro hardness was measured with the Micro-vicker's hardness testing machine. Then SEM and XRD analysis is done to get the details of the phases present.

KEYWORDS: Al-Mg-Si, Wear, Aging, Carbide Composite

Received: Apr 21, 2016; **Accepted:** May 05, 2016; **Published:** May 07, 2016; **Paper Id.:** JMMERJUN20161