

Effect of heat treatment on Ni-P-C_g(Graphite)-SiC composite coated cast AlSi alloy

Abstract

The study presents the effect of heat treatment on electroless Ni-P-C_g-SiC composite coated cast AlSi (ADC12) alloy. No significant changes are noted on the average surface roughness and surface morphology of the coating film with different heat treatment processes. The growth of the hard Ni₃P phase in the electroless Ni-P-C_g-SiC composite coating after heat treatment at 400°C for one hour strongly enhance the micro hardness of the AlSi-alloy (ADC12) surface from originally 101HV to 689HV. However, the micro hardness of the cast AlSi-alloy substrate decreases form 100HV to 60HV.

Keywords — AlSi alloy, electroless nickel plating, graphite, heat treatment, Silicon Carbide (SiC).