

ABSTRACT

Widasari Lasmaria. Analysis the Effect of Annealing and Aging on the Hardness at Al-Cu-Mg/SiC Composites through the Stir Casting Process. Mini Thesis, Physics, Faculty of Mathematics and Natural Sciences. February 2022.

The development of aluminum properties by varying the SiC composition as reinforcement is carried out using the stir casting method in the liquid phase so that it reaches homogeneity in the mixing of the matrix and the filler. In this liquid phase, there is a fixed composition value in magnesium of 3.8 wt%, where the function of magnesium as a wetting agent and also a fixed composition of copper is 1.8 wt%, where copper has a function in increasing the tensile strength of aluminum composites. In addition, the variation of the SiC composition at 6 wt% , 6.5 wt% wt and 7 wt% increases the hardness value of the aluminum composites. In this study, there are advantages of some of the heat treatments carried out to maximize the results of the stir casting, whose mixing conditions are not yet perfect because there are still pores of air bubbles. Therefore, for the first heat treatment, annealing was carried out at 450⁰C for 2 hours, the advantage of the annealing process was to make the sample pores smaller so as to produce presipitals which functioned to increase the hardness of the aluminum composite. Last by aging heat treatment at a temperature of 160⁰C for 16 hours resulted in an increase in strength of the composite aluminum.

Keywords: SiC, Alumunium Composite, Stir Casting, Annealing, Aging