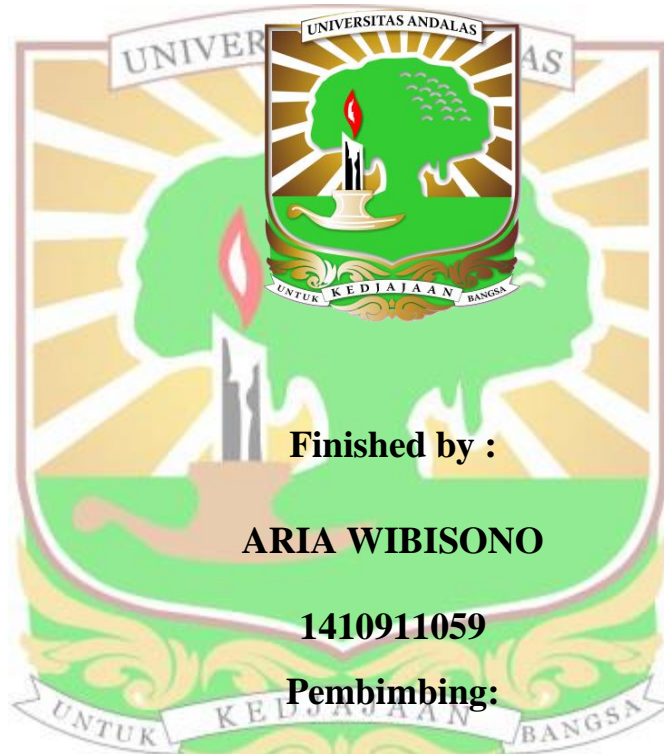


FINAL PROJECT

“ Effect of Rare Earth Metal Samarium (Sm) on Fluidity and Mechanical Properties of Alumunium Silicon Alloy (Al-7%Si) “



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**MECHANICAL ENGINEERING
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EFFECT OF RARE EARTH METAL SAMARIUM (Sm) ON FLUIDITY AND MECHANICAL PROPERTIES OF ALUMINIUM SILICON ALLOY (Al-7%Si)

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ABSTRACT

Aluminum-Silicon alloy is a widely used material in the industry including aerospace and automotive due to its good properties such as corrosion resistance, relatively high strength, high fluidity, and low defect occurrence. However, in Aluminum-Silicon alloys, there are impurity elements that interfere with other manufacturing processes. The Impurity element cannot be removed but can be modified as a step to decrease a problem. Some elements that are effectively used to modify aluminum-silicon alloys are rare earth elements. In this research, the rare earth metal element is Samarium. The purpose of this research is to know the effect of rare earth metal samarium to fluidity value of aluminum-silicon alloy (Al-7%Si) by a spiral method. This research was conducted to samarium content of 0.01%, 0.05% and 0.1% from 5% concentration. Fluidity testing used spiral shape mold with a variation of casting temperature of 670 °C, 720 °C, and 770 °C. The hardness test was determined using a vickers hardness tester and the microstructures of the samples were examined by optical microscope.

The results showed that the addition of samarium content with range 0% to 0.01% yielded a large value of fluidity, but the addition with content 0.01% to 0.1% gave a small result at temperature pouring 720 °C and 770 °C. Also, the value of fluidity decrease with content Samarium 0% - 0.1% at temperature pouring 670 °C. The value of fluidity increases with a variation of temperature 670 °C, 720 °C and 770 °C in each addition of rare earth metal samarium and the hardness improved as the amount of addition Samarium content of Aluminum-Silicon alloys (Al-7%Si).

Key Words : Aluminum-silicon alloy, Rare Earth Metal, Samarium, Fluidity

