ANALYSIS OF THE EFFECT OF SILICON CARBIDE EXCESSIVE ADDITION IN ALUMINIUM CASTING USING THE SANDCASTING METHOD ON HARDNESS AND BENDING VALUES

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ABSTRACT

Pure aluminum 6061 has a low hardness level, so it is necessary to have a substance or particle to increase hardness, one of the particles that can be used is Silicon Carbide (SiC). The advantage of using SiC as a reinforcing particle is that it is effective in increasing strength, thermal conductivity, wear resistance, fatigue resistance, and reducing thermal expansion. In this study, the author will conduct research on aluminum 6061 material with the addition of Silicon carbide on Brinell and bending hardness values. This study will mix aluminum 6061 with silicon carbide using a mixture ratio of 20%, Silicon carbide 25%, Silicon carbide and 30%, Silicon carbide through a re-casting process with the sand casting method. Based on the Brinell hardness test of Aluminum 6061 along with the addition of silicon carbide mixture, the hardness value actually decreased with the highest value in variation 2 of 35.195 BHN and the lowest value in variation 3 of 33.577 BHN. Based on the bending test of Aluminum 6061 along with the addition of silicon carbide, the bending value increased where variation 3 was the highest variation with a value of 220.27 Mpa and the lowest value in variation 2 of 211.68 Mpa. The addition of Silicon carbide did not affect the increase in bending strength and material hardness values. This is evidenced by the variation added Silicon carbide in variations 2 to 4 cannot exceed variation 1 which is pure Aluminum 6061.

***Keywords**: Aluminum 6061, Silicon Carbide, Sand Casting*