

Effect of The Use of Fly Ash as Aluminum Casting Molds with Variations of Binding Materials against Impact Toughness and Microstructure

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ABSTRACT

This research was conducted to find out the results of the toughness and microstructure form of Al-Si metal casting product mixture of fly ash, lapindo mud and water, the mixture is varied into three percentage variations of the mixture to find out the best variation of Al-Si metal casting using fly ash, lapindo mud, and water. The results of the impact test of the first composition variation have the lowest impact toughness compared to the second and third composition variations, the best composition variation for this impact test is the second composition variation, then seen from the microstructural test to see how large the aluminum grains are and how homogeneous the al-si grains are, As a result, the variation in the first composition of aluminum grains is smaller than other composition variations this is because the first composition variation fails when pouring metal liquids, the second composition variation has a larger microstructure grain than other composition variations, the third composition variation seen from the microstructure is experiencing instability in the grain because the third composition variation of the pour temperature is very low, the smaller the grains, the more grainboundaries cause the lower the toughness value.

Keywords: metal casting, Al-Si, lapindo mud, impact charpy, olympus BX41M.