

**Analysis Of The Quality Of Metal Casting Results Made From Beverage Can Waste With Variations Of Molds Binding Materials From Coal Burning Dust (Fly Ash) And Molasse**

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**ABSTRACT**

*Metal casting is the activity of processing an object made from metal by cooking it in a melting furnace which is then poured into a mold to produce an object according to the desired dimensions. The method often used in casting is the sand casting method. In this study the composition used 80% river sand, 17% fly ash, 3% sugar cane molasses in composition 1, Composition 2 80% river sand, 15% fly ash, 5% sugar cane molasses, composition 3 river sand 80%, fly ash 13%, molasses 7%, and the material being melted is used drink cans. The results of rockwell hardness testing on composition 1 produced an average value of 90 HRB, composition 2 produced a hardness value of 86 HRB and composition 3 produced a value of 75 HRB. The results of the porosity test in composition 1 had an average porosity value of 14.3%, composition 2 had an average value of 18% and composition 3 had an average porosity value of 24%. The results of microstructure testing have a comparison of microstructure grains and grain boundaries in composition 1 of 73% and 27%, composition 2 has a ratio of 37.28% and 62.72%, and in the study composition 3 has an average value of 58.30 % and 41.70%. These three tests influence the hardness results obtained, where the lower the porosity value, the resulting hardness will increase and in the microstructure test, the greater the comparison of the percentage of microstructure grains, the harder the hardness value will also increase.*

***Keywords: Casting, Hardness, Porosity, Micro structure***