

**THE EFFECT OF USING VOLCANIC SAND AND
BENTONITE AS ALUMUNUM CASTING MOLDS WITH
VARIATIONS IN MOLD COMPOSITION ON TENSILE
TESTS AND IMPACT TEST**

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ABSTRACT

Metal casting is a process where molten metal is melted by heating it until it melts and then pouring it into a mold to produce a cast product. The mold used in this research is a mold made from Mount Semeru Volcanic Sand. There are several mixtures of materials used as molds and binding materials in this research, namely Mount Semeru Volcanic sand, Bentonite, Water. Composition variations used in this research include Composition 1 Mount Semeru Volcanic Sand 80%, Bentonite 10%, Water 8%, Composition 2 Mount Semeru Volcanic Sand 75%, Bentonite 15%, Water 10%, Composition 3 Mount Semeru Volcanic Sand 70 %, Bentonite 20%, Water 10% and using used pistons as the melted material. The tensile test results for composition 1 were with an average value of 97.891 N/mm², composition 2 with an average value of 96.125 N/mm² and composition 3 with an average value of 83.883 N/mm². For the Impact test value, composition 1 has an average value of 0.0564 J/mm², composition 2 has an average value of 0.0327 J/mm² and composition 3 has an average value of 0.028 J/mm². From the results obtained, it can be concluded that the smaller the percentage of bentonite as a binder, the higher the tensile test and impact test values. Composition 1 is a better composition than compositions 2 and 3 because it has high tensile test and impact test values.

Keywords: *Sand mold casting, Lumajang Sand, Bentonite, Used Pistons, Variations in Mold Composition, Tensile Testing, Cahrpy Impact Testing.*