

***Variation of Mount Semeru Volcanic Sand As Sand Casting With Lapindo Mud  
As A Binder In Used Aluminum Piston Filling Against  
Porosity and Impact Tests***

*Mentor (Alex Taufiqurrohaman Zain, S. Si., M.T)*

**Moh. Ridwan**

*Study Program of Automative Engineering  
Majoring of Engineering*

**ABSTRACT**

*Metal casting is a process of heating metal until it reaches the melting point of a metal, then the melted metal is put into a mold. Sand casting is a casting method that uses sand as the molding medium. One of the sands that can be used as sand and binder is Mount Semeru volcanic sand and Lapindo mud. This study aims to determine how the influence of variations in the mixture of volcanic sand and Lapindo mud on metal casting using sand moulds. Variations of the mold composition used are Composition 1 (77% volcanic sand, 13% Lapindo mud, 10% water), Composition 2 (74% volcanic sand, 16% Lapindo mud, 10% water), and Composition 3 (71% volcanic sand, 19% Lapindo mud, 10% water). The material used as a specimen is aluminum from used pistons. The results obtained from this research are, the composition of 1 casting specimen produces a porosity percentage of 10.28% and an impact energy strength of 0.0115 J/mm<sup>2</sup>, the composition of 2 casting specimens produces a porosity percentage of 12.17% and energy strength impact of 0.0111 J/mm<sup>2</sup>, the composition of the 3 casting specimens produced a porosity percentage of 14.85% and an impact energy strength of 0.0099 J/mm<sup>2</sup>. From the results obtained, it can be concluded that the smaller the percentage of Lapindo mud used as a binder, the percentage of porosity in the specimen is reduced and the impact energy strength on the specimen is increased. Mold composition 1 is the best of the other compositions, because it has the lowest percentage of porosity and the highest impact energy strength.*

*Key words : Sand Mold Casting, Volcanic Sand, Lapindo Mud, Charpy Impact Test,  
Porosity Test.*