

Pemanfaatan Debu Sisa Pembakaran Batu Bara (*fly ash*) sebagai Cetakan pada Pengecoran Aluminium dengan Variasi Komposisi Bahan Cetakan terhadap Uji Tarik dan Porositas (*Utilization of Coal Combustion Dust (fly ash) as a Mold in Aluminum Casting with Variations in Mold Material Composition on Tensile and Porosity Tests*). Supervisor: Dicky Adi Tyagita, ST., MT

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ABSTRACT

Casting using sand mold is one of the metal casting processes that has temporary molds, the material often used is sand. The mold and binder materials used in this research are fly ash and Lapindo mud. This research uses variations in the composition of the mold consisting of a composition 1: fly ash 80,7 %, Lapindo mud 12,6 %, and water 11,4 %, composition 2: fly ash 73,61 %, Lapindo mud 17,5 %, and 14,2 % water, composition 3: fly ash 66,4 %, Lapindo mud 22,4 %, and water 17,1 %. The mold was then tested by a compressive force aimed at as an indicator in this study. Results from the mold press strong test include: composition 1 of 5.23 N/cm², composition 2 of 11.56 N/cm², and composition 3 of 13.2 N/cm². The cast material used is piston brand Yamaha. This method aims to determine the effect of each mold composition on the tensile strength and porosity of the cast product. The results obtained in composition 1 produce a cast product with a porosity value of 47.9% and a tensile strength value of 148 N/mm². In composition 2 produces a cast product with a porosity value of 41.9% and a tensile strength value of 168 N/mm². In composition 3 produces a cast product with a porosity value of 48.5% and a tensile strength value of 143.3 N/mm². So it can be concluded that the mold with the lowest compressive strength will produce a high porosity value, but too high the water used also produces a high porosity value and at a tensile strength value inversely proportional to the porosity value.

Keywords: Sand casting, fly ash, Lapindo mud, Used pistons, Compressive strength, Porosity, Tensile strength.