EFFECT OF MAGNESIUM AND ZINC ADDITION ON TENSILE AND BENDING STRENGTH OF 7075 ALUMINUM BY SAND CASTING METHOD

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ABSTRACT

As time goes by, the material industry market continues to grow. Demand for product quality is increasing in line with the needs and demands of the market. Therefore, improving product quality is an important requirement, one of which is aluminum alloy material. Aluminum is one material that is often used in industry. One of the commonly applied methods in aluminum forming is the sand mold casting method. The sand mold casting process is a stage of melting metal into a sand mold, which is then cooled to form the final product as needed. The purpose of this study was to determine the effect of the addition of magnesium and zinc to 7075 aluminum on the value of the tensile test and bending test with the sand mold casting method. The variables used are independent variables consisting of specimen variation 1 using 200 g of aluminum material, specimen variation 2 using 188 g of aluminum material with a mixture of 12 g of magnesium, and specimen variation 3 using 188 g of aluminum material with a mixture of 12 g of zinc. The results of the tensile test indicate that the highest voltage occurred in specimen variation 2 at 63.86 MPa and an extension of 6.36 mm. While the bending test obtained the highest bending strength in specimen variation 1, with a result of 290.83 MPa. The best specimen results in the tensile test can be implemented in the manufacture of vehicle suspensions, while the bending test can be implemented in the manufacture of swing arm.

Key Words : Sand Mold Casting, Aluminum Alloy, Specimen Variation Composition, Tensile Test, Bending Test.