

## SUMMARY

**Grahita Ryan Ardana**, Mechanical Engineering, Faculty of Engineering Brawijaya University, January 2015, Effect of Plunger Pressure And Ceramic Powder Addition to Hardness and Porosity In Al-Cu Casting, Lecturer : Achmad As'ad Sonief, Purnami.

Casting is a manufacturing process that uses liquid metal and molds to produce parts with a shape that approximates shape of final finished product. Squeeze casting process that usually called the liquid metal forging is a method that combines some advantages of forging and casting process. Plunger pressure is given in squeeze casting process to produce a product that has a good quality. More greater the plunger pressure then possibility of cavities in castings will be reduced so casting product structure will be more solid and hardness will increase.

Aluminum alloy Al-Cu is used in this casting because with copper element in aluminum will increase it's hardness and strength. In addition, it is also use ceramic powders that has fragile, hard and stiff characteristic so it can be used as material or filler in metal casting process. In this study used a variation of plunger pressure 20, 40, 60 and 80 MPa and variation of ceramic powders 3, 6 and 9% of weight fraction. Testing method that used is Vickers method for testing hardness and piknometri method for testing porosity.

The results showed that plunger pressure does not affect hardness and porosity because solidification process is faster than suppression process. For a while, ceramic powders shows the influence of increasing porosity and decreasing hardness of Al-Cu casting product. More ceramic powder is added, clumping occurs so distribution does not spread well. Clumps cause cavities formation, consequently increasing porosity of casting results. Porosity causing specimen surface can not hold pressure force when indented so it's hardness is declining.

Key Word : *squeeze casting, plunger pressure, ceramic, Al-Cu, hardness, porosity*