SUMMARY

Haryo Ridhonoto Muktiaji, Departement of Mechanical Engineering, Faculty of Engineering Brawijaya University, December 2016, The Effect of Aluminium Al-Mg-Si Recycling Levels to the Impact Strength and Hardness, Academic Supervisor : Dr.Ir. Wahyono Suprapto MT., Met. and Purnami ST., MT.

On current this condition, a market of demand continues to increase with the development of technology in particular in the field of manufacturing industry had an impact on the availability of raw materials. One of his problem solving is to use process recycling. Aluminum is one of the ingredients of the metals can be in recycling. To make a product, one of the widely used manufacturing process is with a metal casting. One reference for make a good product is have a good mechanical properties of the material such as the impact strength and hardness. Before it was made into a product, the impact strength and hardness is do a testing. So the purpose of this research is to know how the effect of level the recycling on impact strength and the hardness.

This research used aluminium alloy Al-Mg-Si which that is came from the aluminum structure of the former with has variation rate of recycling the first, second, third and fourth with the pouring of temperature is 700°C and pre-heating the mold until the temperature is 260°C. Then each level of recycling, we had obatined each of 3 specimens to be tested and to find out the impact strength and its hardness. For test results of hardness on each specimen, we obatined the average of hardness trends is increase, with the lowest value on recycling first, i.e. 98 HB. While the highest average of hardness has at third with a value of recycling 120 HB. From the results of impact testing of every specimen obtained that the most high-impact strength on the first recycled, 6.28 J/mm and the lowest of impact strength on the first recycled, 5.18 J/mm.

From the hardness test and impact strength testing on this research, we can be known that with more and more do levels of recycling, give a impact the inclusion and precipitation of Fe solution in the specimen. That is condition, with in ever increasing of hardness can make decreases the impact strength.

Keywords: Castability, Scrap, Recycling, Secondary Aluminium, Inclusion