

Effect of Zinc Additions on the Microstructure and Mechanical Properties of Mg-3Al Alloy

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Abstract : In this study, the effect of zinc content (0.5-3.0 wt.%) in as-cast Mg-3Al alloy which were fabricated with high-purity raw materials towards the microstructure and mechanical properties was studied. Microstructure results showed that increase in zinc content changed the secondary phase distribution of the alloys. Mechanical test results demonstrate that with the increasing Zn addition the enhancement of the hardness value by 29%, ultimate tensile strength by 16% and yield strength by 15% can be achieved as well as decreasing of elongation by 33%. The improvement in mechanical properties for Mg-Al-Zn alloys with increasing Zn content up to 3% of weight may be ascribed to second phase strengthening.

Keywords : magnesium, zinc, mechanical properties, Mg17Al12

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