



Evaluation of Microstructure, Conductivity and Hardness of Al-6Si-0.5Mg-xCu(x=0, 1 & 2) Casting Alloys at Different Ageing Conditions

By Abul Hossain

GRIN Verlag Gmbh Apr 2014, 2014. Taschenbuch. Book Condition: Neu. 210x148x1 mm. This item is printed on demand - Print on Demand Neuware - Scholarly Essay from the year 2014 in the subject Materials Science, , course: PhD, language: English, abstract: Factors that influence the microstructure, conductivity and hardness of Al-6Si-0.5Mg-xCu(x=0, 1 & 2) casting alloys were critically analyzed. Experimental improvements of three alloys were studied and the microstructure, conductivity and hardness have been investigated. The addition of Cu to Al-6Si-0.5Mg alloy resulted in the formation of a hard Al2Cu phase and improved the hardness. The Cu-free and Cu-containing Al-6Si-0.5Mg alloys were homogenized (24hr at 500oC), solution treated (2hr at 540oC) and aged at different temperature and time. Formations of different inter-metallic phases were studied by conductivity and hardness measurement in the both Cu free and Cu added Al-6Si-0.5Mg alloys. Inter-metallic phases (hard phases) formed during ageing after solution treatment and they have strong effect on the age hardening and conductivity. An addition of Cu has strong interaction with Al, Si, Mg atoms and vacancies. The increased conductivity in the materials results from the decrease in concentration of the alloying elements in the aluminum matrix due to decomposition of second...

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