

Effect of Aging Treatment on Tensile Properties of AZ91D Mg Alloy

Authors : Ju Hyun Won, Seok Hong Min, Tae Kwon Ha

Abstract : Phase equilibria of AZ91D Mg alloys for nonflammable use, containing Ca and Y, were carried out by using FactSage® and FTlite database, which revealed that solid solution treatment, could be performed at temperatures from 400 to 450 °C. Solid solution treatment of AZ91D Mg alloy without Ca and Y was successfully conducted at 420 °C and supersaturated microstructure with all beta phase resolved into matrix was obtained. In the case of AZ91D Mg alloy with some Ca and Y, however, a little amount of intermetallic particles were observed after solid solution treatment. After solid solution treatment, each alloy was annealed at temperatures of 180 and 200 °C for time intervals from 1 min to 48 hrs and hardness of each condition was measured by micro-Vickers method. Peak aging conditions were deduced as at the temperature of 200 °C for 10 hrs.

Keywords : Mg alloy, AZ91D, nonflammable alloy, phase equilibrium, peak aging

Conference Title : ICMMP 2015 : International Conference on Microstructure and Materials Properties

Conference Location : Vancouver, Canada

Conference Dates : August 06-07, 2015