

Mg-M-Li Alloys Prepared by Mechanical Alloying and their Hydrogen Storage Characteristics

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ABSTRACT

Mg₉₆M₂(LiH)₂ (M=Y, Zn, Al, Ag), Mg₉₈(LiH)₂ and Mg₉₆(LiH)₄ powder alloys were produced by ball milling and deliberately air-exposed by 12 hours in order to investigate their hydrogen storage properties. The addition of LiH at the level of 2 mol % had a beneficial effect on the kinetics of the hydriding and dehydriding processes at 300 and 350 °C compared to mechanically milled Mg powders. However, the additions of Al, Ag, Zn and Y mostly had an opposite effect. Only the addition of aluminum seems to have provided an advantage of a different sort, in reducing the susceptibility of the Mg powders to become oxidized during the course of processing and of the hydriding and dehydriding treatments.

Keywords: hydrogen storage; Mg alloys; PCI curves.

