EFFECT OF VARIATING WEIGHT COMPOSITION of Al and MILLING SPEED on MECHANICAL ALLOYING PROCESS about PHASE and MICROSTRUCTURE CHANGES

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Abstract
There are many application of magnesium alloys in industry, especially in automotive industry. Commonly, magnesium alloys is used as material in engine block. Good high temperature resistant and strength are motives in using magnesium alloys. Variables used in this study is weight composition of Al. They are 2,4,10 and 44 wt% Al. Alloying is done by milling process (HEM E3D) in milling speed 700 Hz and 1400 Hz. After alloying finished, the product is in powder form which would be tested on microstructure by SEM, phase analysis by X-Ray Diffraction (XRD) and thermal analysis. On mechanical alloying process which takes place in 3 hours, is resulted some conclusions. They are, milling process is produced some magnesium alloys by 1400 Hz as milling speed. In 2 and 4 wt% Al, is produced Mg alloys with δ solid solution form. In 10 wt% Al is produced Mg Alloys with δ+γ phase, and in 44 wt% Al, is produced γ phase.

Keywords: Mg-Al, Weight composition, Milling speed