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# On the Microsegregation of Al-Mg Alloys by Thermal Analysis and Numerical Modeling

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## Abstract

Knowledge about solid fraction versus temperature during solidification is crucial for the control of solidification processes. In the present paper solidification sequence and path of Al-Mg binary alloys containing 6.7 and 10.2 wt.% Mg was investigated by a series of DTA and quenching experiments and numerical modeling in 0.5 and 5 K min<sup>-1</sup> cooling rates. Experimental results show that at both cooling rates, Al-6.7 wt.% Mg solidifies with a single phase structure, but Al-10.2 wt.% Mg solidifies with a two phase structure. According to the results of numerical modeling, good agreement between calculated solidification curves and experimental solid fractions, but poor correlation with concentration profiles. The source of discrepancies is discussed according to different theories of microsegregation.

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