Precipitation and dissolution kinetics of the δ phase in Cu-15wt%.In and Cu-9wt%.Sb alloys.

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Abstract

Theprecipitation and dissolution of the δ phase in the supersaturated solid solutions of both Cu-15wt%. In and Cu-9wt%.Sballoys has been studied during isothermal and anisothermal analysis using several experimental methods.

Despitethat the results confirm that the δ phase precipitation is faster in the Cu-15wt%. In alloy than in the Cu-9wt%.Sb alloy, no effect has been registered on the DSC curves during heating after quenching, which does not permit the precipitation kinetics characterization.

However, enough ageing permits theδ phase dissolution kinetic analysis in the two alloys. Dissolution endothermic effectspermitto establish and quantitatively relate the kinetics parameters to composition and temperature shifts, phase stability, and the driving force available for solution treatment.

Keywords: Solid solution, precipitation, diffraction, DSC, activation energy.