Assessment of the effect of temperature and annealing time homogenization AlCu4MgMn alloys in terms of microstructure image analysis methods and EDX

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Homogenization is defined as a method of heat treatment, which consists of holding time at high temperature near the liquidus (approx. 0.7 to 0.8 the melting temperature) to eliminate chemical inhomogeneity diffusion processes. Cause of segregation is selective crystal solidification in the gradual change in composition of the solid phase. Melt began to appear after certain of the hypothermia during cooling, and the growth of germs in accordance with the general laws of crystallization. Each rigid layer has a different chemical composition. The first part of the solid phase ingredient low concentration of the element last, on the contrary, very high. Susceptibility to crystal alloy segregation is greater, the greater the temperature interval solidification of alloys and the horizontal distance between the liquidus and solidus lines. Crystal segregation will also increase with increasing content of alloying elements, which in these experimental alloys occurs as containing 6-9% alloying elements. Crystal segregation can be removed by diffusion, for which it is necessary to create conditions by homogenization annealing.

Keywords: homogenization annealing, AlCu4MgMn alloy, crystal segregation, EDX analysis, image analysis

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