EFFECTS OF THERMOMECHANICAL TREATMENTS ON THE CHEMICAL AND MECHANICAL PROPERTIES OF AL-CU ALLOY

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Abstract

The development of Al-9.37Cu alloy was characterized through metallographic examinations. The alloy having been cast using Die –Casting method was subjected to series of treatment such as solution treatment, water quenching and air-quenching as well as over –ageing. The result showed that the strength of Al9.37Cu was greatly enhanced when the alloy was rolled, and aged. This was as a result of the growth of large precipitates along and near the Aluminum grain boundaries which interfere with the movement of dislocations when the metal yields. However, when the alloy was heated beyond 200°C (500°C), the tensile values were observed to decline as a result of equilibrium tetragonal phase which is fully in – coherent and was characterized with low strengthening effect due to fibrous structures.

KeyWords: Al-9.37Cu, metallography, precipitates, thermomechanical, deformation, INSTRON, over-ageing ductility and Hardnesss