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Investigation of extrusion process and heat treatment on the microstructure and tensile properties of Al-5Sb-5Cu in-situ composite

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Abstract

In current study the effect of extrusion process and heat treatment on the microstructure and mechanical properties of Al-AlSb composites was investigated. Tensile testing results showed that by addition copper element, ultimate tensile strength (UTS) of Al-5Sb-5Cu composite increases dramatically from 197MPa to 381MPa. It was seen that the presence of Cu on the composition of the alloy causes the formation of hard Cu-rich intermetallic particles. The results also indicated that by applying hot-extrusion process and heat treatment the ultimate tensile strength and elongation of the composites increase from 197 MPa and 6% to 381 MPa and 17%, respectively.

Keywords: Al-5Sb-5Cu, in situ composite, extrusion, heat treatment.

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