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# Plastic flow behavior and microstructure characteristics of light-weight 2060 Al-Li alloy

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## Abstract

Microstructure and plastic flow behavior of 2060-T8 Al-Li alloy were investigated by subjecting the alloy to tensile tests at the temperatures varied from 25 to 500°C, and a strain rate 0.001-0.1 s<sup>-1</sup>. The constitutive equation of the alloy is based on a hyperbolic sine model, and consistent with the experimental data with 5.5% in deviation. The microstructure of the alloy is primarily composed of the phases denoted by T<sub>1</sub> (Al<sub>2</sub>CuLi) and δ' (Al<sub>3</sub>Li), respectively. Both are distributed in grain interior. Moreover, a discontinuous distribution of the phases enriched with Cu is presented at grain boundaries due to the depletion of Cu atoms at grain boundaries, induced by an extensive existence of the phase T<sub>1</sub> within grain interior. The transition in the fracture mode of the tensile samples from the brittle to ductile was also confirmed with the decrease of strain rate and the increase of temperature at which the tension was conducted.

## Key words

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