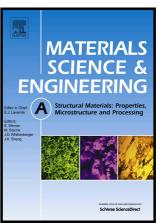
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www.elsevier.com/locate/msea

PII: S0921-5093(18)30381-2

DOI: https://doi.org/10.1016/j.msea.2018.03.045

Reference: MSA36238

To appear in: Materials Science & Engineering A

Received date: 2 November 2017 Revised date: 19 January 2018 Accepted date: 11 March 2018

Cite this article as: L. Ye, Y. Liu, D.S. Zhao, Y.L. Zhuang, S.B. Gao, X.Q. Liu, J.P. Zhou, J.N. Gui and J.B. Wang, Effects of Sn on the microstructure and mechanical properties of a hot-extruded Mg-Zn-Y-Sn alloy, *Materials Science & Engineering A*, https://doi.org/10.1016/j.msea.2018.03.045

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ACCEPTED MANUSCRIPT

Effects of Sn on the microstructure and mechanical properties of a

hot-extruded Mg-Zn-Y-Sn alloy

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Abstract: Microstructure and mechanical properties of the hot-extruded Mg-1.5 at.% Zn-2.0

at.% Y-x at.% Sn (x=0, 0.5, 1.0, 2.0) alloys were investigated. The ultimate tensile strength

(UTS), yield strength (YS) and micro-hardness of the alloys reached the peak values in the

alloy with 0.5 at.% Sn. The values of the UTS, YS and micro-hardness of the hot-extruded

Mg-1.5 at.% Zn-2.0 at.% Y-0.5 at.% Sn alloy were 379 MPa, 230 MPa, and 89.1 HV. It was

found that the enhanced mechanical properties in the hot-extruded Mg-1.5 at.% Zn-2.0 at.%

Y-0.5 at.% Sn alloy were attributed to the precipitated MgZnY particles with nanoscale size

and the uniformed distribution of the LPSO phase.

Keywords: Magnesium alloy; LPSO phase; phase transformation; mechanical properties.

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