

Accepted Manuscript

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S.K. Sahoo, R.K. Sabat, S. Panda, S.C. Mishra, S. Suwas

PII: S1044-5803(16)31030-0
DOI: doi:[10.1016/j.matchar.2016.11.030](https://doi.org/10.1016/j.matchar.2016.11.030)
Reference: MTL 8470

To appear in: *Materials Characterization*

Received date: 6 August 2016
Revised date: 17 November 2016
Accepted date: 21 November 2016



Please cite this article as: Sahoo SK, Sabat RK, Panda S, Mishra SC, Suwas S, Texture and microstructure evolution of pure zinc during rolling at liquid nitrogen temperature and subsequent annealing, *Materials Characterization* (2016), doi:[10.1016/j.matchar.2016.11.030](https://doi.org/10.1016/j.matchar.2016.11.030)

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Texture and Microstructure Evolution of Pure Zinc during Rolling at Liquid Nitrogen Temperature and Subsequent Annealing

S. K. Sahoo^{a,*}, R. K. Sabat^b, S. Panda^a, S. C. Mishra^a and S. Suwas^b

^a Department of Metallurgical & Materials Engineering, NIT Rourkela, 769008, India

^b Department of Materials Engineering, IISc Bangalore, 560012, India

ABSTRACT

As-cast pure Zinc (Zn) was subjected to **rolling at liquid nitrogen temperature to impart** 90% reduction in thickness. The rolled samples were then annealed at 50 °C for different soaking times of 5 min, 10 min, 20 min and 30 min respectively. The texture and microstructure evolution during rolling and subsequent annealing of these samples was investigated in the present study. A dominant $\langle 11\bar{2}0 \rangle$ fiber texture was observed **along the rolling direction of both rolled and annealed samples**. However, the texture intensity was increased till 10 min of soaking time and it was then decreased on further increasing the soaking time. Only $\{10\bar{1}2\}$ type compressive twins were observed in the samples and these twinning was found to be significant in all the samples. The Vickers hardness of the samples was increased till 10 min of annealing time followed by decrease in hardness on further increasing the annealing time.

Key Words: Zinc, Cold Deformation Texture, Annealing Texture, Twinning, Hardness.

* Corresponding Author; Tel: +91 9040289501; Fax: +916612462022; Email Address: sursahoo@gmail.com (S. K. Sahoo).

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