Texture and Grain-size Effects on Cyclic Plasticity in Copper and Copper-Zinc - DTU Orbit

Texture and Grain-size Effects on Cyclic Plasticity in Copper and Copper-Zinc

A study of plastic strain controlled fatigue of copper and copper-zinc shows that polycrystalline Cu-30%Zn does not display true cyclic saturation and that texture has a major effect on the cyclic stress-strain (CSS) behaviour, whereas grain size has a minor effect. The self-consistent Sachs estimate of the CSS curve for polycrystalline Cu-30%Zn lies within 20% of the experimental curve for plastic strain amplitudes up to about $5 \times 10^{-3}$, as compared with $1 \times 10^{-3}$ for copper. The increased range of validity of the Sachs model is correlated with slip planarity.

General information
Publication status: Published
Organisations: Department of Solid Mechanics
Contributors: Carstensen, J. V., Pedersen, O.
Pages: 497-500
Publication date: 1997
Peer-reviewed: Yes

Publication information
Volume: A234-236
ISSN (Print): 0921-5093
Original language: English
Keywords: Cyclic plasticity, Texture, Planar slip, Wavy slip
DOIs:
10.1016/S0921-5093(97)00244-X
Source: orbit
Source-ID: 167025
Research output: Contribution to journal › Conference article – Annual report year: 1997 › Research › peer-review