Texture and Grain-size Effects on Cyclic Plasticity in Copper and Copper-Zinc - DTU Orbit (31/03/2019)

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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.

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