

Documents

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Wear properties of brass samples subjected to constrained groove pressing process

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Abstract

Ultrafine grained materials have experienced a rapid development during the last two decades. Constrained groove pressing (CGP) process is one of the severe plastic deformation methods to fabricate ultrafine grain sheet materials. In this research, wear behavior of brass sheet subjected to CGP process was investigated. Generally it is shown that CGP process enhances the wear resistance of the material and this behavior is improved by increasing pass number. Also, the effect of initial pass and lower applied normal load on the wear resistance is more profound than subsequent passes and higher applied normal load, respectively. In addition, the influence of normal load is more profound than pass number at the increment of friction force. Although CGP process results in reduction at the specific wear rate, the influence of the first pass is much higher than the subsequent ones. Furthermore, lower specific wear rate is occurred at the higher applied normal load. The scanning electron microscopy analyses indicated that the wear mechanism is transferred from adhesion, delamination, abrasion and oxidation for the annealed condition to abrasion and adhesion for the third pass CGP sample. Also, it is found that there is a reverse relationship between specific wear rate and hardness. © 2014 Elsevier Ltd.

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