

Effect of Hot Equal Channel Angular Pressing Process on Mechanical Properties of Commercial Pure Titanium

Authors : Seyed Ata Khalkhali Sharifi, Gholamhossein Majzoubi, Farhad Abroush

Abstract : Developing mechanical properties of pure titanium has been reviewed in this paper by using ECAP process. At the first step of this article, the experimental samples were prepared as mentioned in the standards. Then pure grade 2 Ti was processed via equal-channel angular pressing (ECAP) for 2 passes following route-A at 400°C. After processing, the microstructural evolution, tensile, fatigue, hardness properties and wear behavior were investigated. Finally, the effect of ECAP process on these samples was analyzed. The results showed improvement in strength values with a slight decrease in ductility. The analysis on 30 points within the sample showed hardness increase in each pass. Also, it was concluded that fatigue properties were increased too.

Keywords : equal-channel angular pressing, titanium, mechanical behavior, engineering materials and applications

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