Advanced Materials Research, vol.626, 2012, pages 470-474

The Factors Affecting the Swelling of W–Bronze Composite System at Different Sintering Conditions

Abstract

During sintering of Wbronze metal matrix composites, the difference in the interdiffusuion path, sintering atmosphere and alloying element might be the source of the swelling phenomenon. In this study, the factors lead to swelling of Wbronze sintered compacts were investigated. To achieve this goal, two swelled groupes of Wbronze sintered compacts were examined. The first group was compacts of ball milled powder with activator additions and the second group was compacts of ball milled powder infiltrated by bronze melt. The latter type showed the severest level of swelling. Sintered density measurements, X-ray diffraction analysis (XRD), scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDS) were incorporated to clarify and predict the reasons standing behind the swelling of the Wbronze sintered compacts. Key words: swelling, diffusion path, grain size, sintering activator.

Keywords: Diffusion Path, Grain Size, Sintering Activator, Swelling