

Production of (V-B) Reinforced Fe Matrix Composites

Authors : Kerim Emre Öksüz, Mehmet Çevik, A. Enbiya Bozdağ, Ali Özer, Mehmet Şimşir

Abstract : Metal matrix composites (MMCs) have gained a considerable interest in the last three decades. Conventional powder metallurgy production route often involves the addition of reinforcing phases into the metal matrix directly, which leads to poor wetting behavior between ceramic phase and metal matrix and the segregation of reinforcements. The commonly used elements for ceramic phase formation in iron based MMCs are Ti, Nb, Mo, W, V and C, B. The aim of the present paper is to investigate the effect of sintering temperature and V-B addition on densification, phase development, microstructure, and hardness of Fe-V-B composites (Fe-(5-10) wt. %B - 25 wt. %V alloys) prepared by powder metallurgy process. Metal powder mixes were pressed uniaxial and sintered at different temperatures (ranging from 1300 to 1400°C) for 1h. The microstructure of the (V, B) Fe composites was studied with the help of high magnification optical microscope and XRD. Experimental results show that (V, B) Fe composites can be produced by conventional powder metallurgy route.

Keywords : hardness, metal matrix composite (MMC), microstructure, powder metallurgy

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