Influence of Fabricating Process on Microstructure and Properties of Spheroidal Cast Tungsten Carbide Powder

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Abstract

Cast tungsten carbide powder is an important hard facing material. Spheroidal cast tungsten carbide powder is of special interest due to excellent flowability and fine grain structure. A super high temperature furnace was developed to fabricate spheroidal cast tungsten carbide powder at a large scale. OM and SEM was taken to characterize the morphology and microstructure of cast tungsten carbide powder. XRD was used to analyze the phase composition of powders involved. It was found that the carbon potential in the furnace and feeding speed play an important role on the microstructure, morphology and properties of spheroidal cast tungsten carbide powder. With carbon potential between 0.3% and 0.9% in the furnace, cast tungsten carbide powder with hardness over 2800(HV0.5), flowability over 7.1s/50g and tap density over 10.3g/cm-^{3} was obtained.

Keywords : Spheroidal cast tungsten carbide, fine feathery structure