

论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第18卷 第2期 (总第107期) 2008年2月

 [PDF全文下载]

文章编号: 1004-0609(2008)02-0209-06

球形钴粉的制备及其在超细晶粒硬质合金中的应用

谭兴龙^{1, 2}, 易茂中¹, 罗崇玲¹

(1. 中南大学 粉末冶金国家重点实验室, 长沙 410083; 2. 湖南顶立科技有限公司, 长沙 410111)

摘要:以碳酸钴为原料, 采用氢气还原法在带式无舟皿连续还原炉中制备超细球形钴粉。考察还原温度和还原时间对钴粉粒度的影响。结果表明, 在420~460 °C还原180 min左右, 可以制备费氏粒度为0.9 μm左右的超细球形钴粉。采用二氧化碳气体钝化处理技术降低了钴粉的氧含量。采用制备的钴粉为超细晶粒硬质合金的粘结剂, 用低压烧结工艺制备出钴相高度分散、晶粒均匀的超细晶粒YG10硬质合金。其晶粒度为0.4 μm, 矫顽磁力达38.0 kA/m, 硬度大于93.0 HRA, 抗弯强度高于3 700 MPa。

关键字: 超细球形钴粉; 气体钝化; 超细晶粒硬质合金

Preparation of spherical cobalt powder and its application in ultra-fine cemented carbides

TAN Xing-long^{1, 2}, YI Mao-zhong¹, LUO Chong-ling¹

(1. State Key Laboratory of Powder Metallurgy, Central South University, Changsha 410083, China; 2. Hunan Denli Technology Co. Ltd, Changsha 410111, China)

Abstract: Ultra-fine cobalt powder was prepared by the reduction of carbonate using a belt continuous boat-less reducing furnace in hydrogen. The influences of reduction temperature and time on the particle size of cobalt powder were studied. Ultra-fine spherical cobalt powder with particle size of around 0.9 μm was prepared at 420–460 °C for 180 min. The influence of CO₂ passivation treatment on the oxygen content of cobalt powder was discussed. Ultra-fine WC-10Co cemented carbides were prepared by vacuum/pressure sintering technology using the obtained cobalt powder as raw binder material. YG10 ultra-fine cemented carbide was prepared with uniform distribution of cobalt phase, homogeneous grain size of around 0.4 μm, hardness equal to HRA93.0, bending strength equal to 3 700 MPa and coercive force equal to 38.0 kA/m.

Key words: ultra-fine spherical cobalt powder; CO₂ passivation treatment; ultra-fine cemented carbides

版权所有：《中国有色金属学报》编辑部

地 址：湖南省长沙市岳麓山中南大学内 邮编： 410083

电 话： 0731-8876765, 8877197, 8830410 传真： 0731-8877197

电子邮箱： f-ysxb@mail.csu.edu.cn