Microwave sintering technology in WC / Co composites

WC / Co composites

Conventional sintered WC / Co must be added a large amount of grain growth inhibitor in order to obtain fine and uniform microstructure, but these grain growth inhibitor is added can reduce the mechanical properties of the final product, while the sample in a microwave sintering hardly any any growth WC grains. without adding a lot of grain growth inhibitors. thereby obtain more excellent mechanical properties.

In the conventional sintering large number of tungsten (mass fraction of 20%) will be dissolved in the cobalt matrix, while the microwave sintering was not observed in the sample to dissolve a large amount of cobalt tungsten phase. Visible microwave sintering can prevent deposition than tungsten drill matrix. The same time. Due to the capillary forces within the crystal is greater than gravity. Sintered sample size uniform shrinkage in two-dimensional space, while the conventionally sintered samples because the influence of gravity. Shapes cause severe distortion. In addition, compared with conventional sintering sample hardness and corrosion resistance of the sample can be obtained by microwave sintering significantly improved.。

Conclusion

Microwave sintering provides a potentially economical and efficient force a sintering method. Has accepted around the world. It overcomes the traditional sintering process many shortcomings. Can enhance the diffusion of power and the rate of diffusion. To reduce energy consumption. significantly reduced drastically reduce the sintering temperature sintering time to improve the physical and mechanical properties of materials;... but it is also - kind of simple sintering method is safe and pollution-free. Scholars from various countries in recent years, the successful application of microwave sintering technology to prepare a variety of metal materials, while the mechanism of microwave sintering of metal also done a preliminary study. Summarizes the characteristics of microwave sintering of metal. Laid the foundation for research and application of microwave technology in the field of metal further a solid theoretical foundation. With the further development of microwave technology. It will become the most promising new generation of sintering technology.

But recently a comprehensive research status of authors believe that microwave sintering technology in the field of metal materials, there are shortcomings to be further developed: While some scholars at home and abroad have carried out a metallic material power of a microwave sintering mechanism and research work. but only 10 years or so with respect to the microwave sintering of ceramic materials research time lag of at least half a century before so there is a lot of force and not very clear that this is one of the major scholars in the field of research has been force;.. relevant specialized . for metallic materials, especially composite microwave sintering of metal-based device also rarely need to devote their energies to the study design research staff.