



Microwave sintering technology in the preparation of metal materials

Although just over 10 hours a microwave sintering technology in metal materials, but it has become the field of powder metallurgy special sintering process is an important method by the extensive attention of scholars at home and abroad in the field of powder metallurgy. And the scope of application has been extended through between the beginning of the alloys and metal compounds to pure metals and composite materials. Here are several of the relevant specific application examples of microwave sintering of metal materials to make a brief introduction.

2. 1 Two yuan iron-based alloys

1999 United States of Roy and other microwave sintering technology among the first successful synthesis of titanium, aluminum, copper, titanium and aluminum, copper and zinc dozens of metal compounds and alloys. Then they use the microwave sintering furnace chamber with additional layers. Also successfully prepared powder metallurgy stainless steel, copper alloy, zinc alloy, tungsten copper alloy and nickel-based superalloys. Sintering the performance part of the binary Fe-based alloys such as shown in Table 1.

表 1 微波烧结与常规烧结二元铁基合金的性能比较

Tab. 1 Comparison of properties for binary iron based alloys prepared by microwave sintering and conventional sintering

合金	烧结工艺	压坯密度 ($g \cdot cm^{-3}$)	烧结坯密度 ($g \cdot cm^{-3}$)	洛氏硬度 /HRB	抗弯强度 /MPa
铁镍 (工业零件)	微波	7.11	7.15	82	1 220
	常规	7.11	7.10	77	751
铁铜 (工业零件)	微波	6.81	7.17	96	978
	常规	6.81	6.84	80	813
铁铜 (实验室样品)	微波	6.95	6.96	75	923
	常规	6.95	6.95	64	840

As can be seen from Table 1. Flexural strength prepared by microwave sintering method iron-nickel alloy than 60 percent of high conventional sintering. The successful application of this technology in the metal and alloy powder caused great repercussions in the world. Many scholars continue to develop the technology. Today. The technology has been successfully used to prepare a variety of metals and alloys. And found that sintering material prepared by microwave performance is superior to conventional sintering method of preparation.