Microwave sintering technology in Pure metal and Multiple iron-based alloys

Pure metal

Copper powder compacts during sintering in the microwave field, the temperature gradient within the material is very small; while the microwave sintering rapid cooling with a rapid thermal sintering characteristics and shorter time to suppress the crystals grew heated slowly to avoid the heating process. recrystallization and growth phenomena appear. finer grain structure makes even the more traditional sintered body sintered. mechanical properties has also been a substantial increase. Microwave sintering with the conventional sintered body of copper having different microscopic pore distribution. The number of pores and the center cross section is less than that at the edge. And because the holding time is shorter. Aggregate pores grow too late. This allows fine pore rounded shape. uniform distribution. this unique microstructure help to improve the deformation ability of the sample.

Multiple iron-based alloys

Metallurgy, iron and copper carbon material with a wide range of uses. Its conventional sintering technology has been quite mature. With the microwave sintering technology development and the development trend of green industry. Preliminary studies have been the beginning of the academic materials using microwave sintering technology of carbon materials, iron and copper. And made some progress.

The microstructure of carbon conventional sintering, iron and copper samples mainly by a large number of ferrite, pearlite and very small holes in the composition of various sizes; whereas microwave sintering the sample due to the cooling process in the natural cooling rate of between between quenching and slow cooling. the samples can be rapidly cooled to room temperature. makes the sintering hardening appears many granular pearlite. thus microwave sintering material microstructure mainly ferrite and pearlite flake or granular very small amount of pores. abound pearlite significantly improve the mechanical properties of the material. In addition. Because of the short sintering time. Pore structure of the sample is smaller microwave sintering, shape nearly circular, evenly distributed. Sample density reached 7. 20g • cm-3. Visible microwave sintering favor higher relative density.

Microwave sintering technology is also widely used in 316I, and 434I, sintered stainless steel preparation time was reduced by 90%; while the microwave sintering of stainless steel to prevent coarsening of the microstructure of a more fine and uniform pore distribution.