



Microwave sintering technology in Tungsten alloy

In the preparation of 92.5W-6.4Ni-1.1Fe alloy during the heating rate in the conventional powder body sintering furnace is $5\text{ }^{\circ}\text{C} \cdot \text{min}$, whereas in a microwave oven. Heating rate can reach $20\text{ }^{\circ}\text{C} \cdot \text{min}$. This allows sintering time reduced by about 75%. thus significantly reduced sintering cycle. and effectively inhibited the grain coarsening. In the conventional sintering process. In addition to the coarse grains will Outsider prolonged sintering will result in brittle intermetallic compounds NiW and Fe7W6 tungsten nickel-iron alloy used in microwave sintering of this type is not found among the brittle intermetallic compounds this allows the tensile strength reached 805MPa. higher than the tensile strength of the conventional sintered body (642 MPa), elongation of 11.2%, was higher than the conventional sintered body (3.5%), the sintered body has better the mechanical properties.

When a high-density sintered alloy. Because of solid and liquid densities are quite different. In the gravity sedimentation of solid meet. When sintering the green body will be deformed. Lip, et al point out. Alloy contact is greater than 0.38. To avoid sintering deformation of high-density tungsten alloy, while the use of microwave sintering technology to get faster heating rates. Makes contact alloy is higher than this value. So that it can effectively control this a problem. When using a microwave sintering method prepared 90W-7Ni-3Fe alloy vertical and horizontal shrinkage shrinkage specimen was 0.21% and 0.72% respectively. Significantly less than conventional sintered samples vertical shrinkage ((1.23%) and the level of contraction rate (3.25%); addition of microwave sintering to promote the consolidation of its average grain size of the alloy is also higher than the small $5.88\mu\text{m}$ · conventional sintering relative density reached 99.88 percent.