



Description of the current situation of domestic and foreign research

Domestic and foreign basic method of manufacturing the surface composites: one is passing through the centrifugal and vacuum force making the alloy powder particles distributed on the mold surface, the obtained infiltration casting layer is dense, it does not need a binder with low porosity and other defects, the quality is more stable. But enhanced surface shape is limited with complex process and expensive equipment. More foreign applications use this method. The second is made an alloy powder by brushing paint or pasting a block or sticking to the mold surface of a solid, simple, it is practical and more suitable for construction, agricultural machinery and production of wear parts.

However, this process has less research on iron castings, it is mostly concentrated on the steel castings. For the second method, it is often encounter such as scouring, pores, slag, poor penetration, uneven composite layer thickness, surface roughness sticky sand and other issues, especially it is for reinforcing particles and matrix interface bonding problems and application engineering, but it is also a lack of systematic research, hindering the promotion and application of surface technology composites, wherein the composite layer in the presence of porosity and slag are the most difficult issues. To solve this problem, many workers carried out extensive research on the casting process optimization from choosing the right material pouring temperature, type and quantity of flux, binder type and quantity of other aspects of a breakthrough . Selecting as the particular flux NaF, polyvinyl alcohol colloid binder, substantially reduce the above-described problems in the casting process exists. Obtaining uniform dense tungsten carbide particles with high chromium white iron compound and a thickness of 3mm ~ 5mm composite layer, to overcome the problem of direct casting tungsten carbide composite layer in the form of tungsten carbide particles of abrasive wear easy to fall off, and the compound layer surface smooth, almost no porosity and slag, with a solid and the substrate. This technology has been successfully applied to actual production, and it is with good results.

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