Properties of master alloys produced by powder metallurgy for production of rhenium-containing superalloys
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Abstract

Modern branches of technology observe growing interest in metals of high melting point, including rhenium and its compounds. Currently rhenium is used mainly in nickel-based superalloys. Rhenium alloys with several percent addition of cobalt and nickel can be used as master-alloys in production of superalloys.

Study covered examination of Re14Ni, Re14Co and Fe10Fe alloys produced by powder metallurgy methods from pure metal powders. The materials were produced by mechanical alloying and sintering methods. Influence of alloying time on such properties of the material as microstructure, homogeneity of chemical composition in micro-zones, powder material grain size, density and hardness was examined.

The increase of communion degree of the materials with the increase of alloying time was observed. The alloying time also influences the final properties of the materials, as with the increase of alloying time hardness and density of sinters increase.

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